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EXPERIENCE WITH ELECTRIC-SHOCK THERAPY IN MENTAL DISEASE*

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SINCE the introduction of electric shock for the treatment of mental disorders by Bini[1] and Cerletti and Bini,[2] a considerable literature has accumulated on the subject. It is true that others[3–5] have used electric shock for producing convulsions and unconsciousness, but to the Italian workers should go the credit for introducing the method as a therapeutic measure in mental disease. The practicability and reasonable safety of their work have been confirmed by Kalinowsky,[6] Shepley and McGregor,[7] Wyllie,[8] Müller,[9] von Braunmühl,[10] Fox,[11] Berkwitz,[12] Kalinowsky and Barrera[13] and others.[14–16] The authoritative American paper is that of Kalinowsky and Barrera. These workers have given over 10,000 shocks and have clearly outlined the method, the advantages and the disadvantages.

The opinions expressed in the literature on the subject may be summarized as follows: The method is less cumbersome than intravenous medication, especially with resistive patients, and is less costly. The loss of consciousness is instantaneous, and the patient does not remember the treatment, so that he does not have the dread of the method that is so conspicuous in Metrazol shock. There seem, on the whole, to be fewer injuries, such as fracture of the dorsal spine. There is not so much general bodily reaction in the sense of increased pulse rate and blood pressure. The results are at least as good as those in Metrazol shock, with which this method is usually contrasted and from which it developed.

The purpose of the study here presented was fourfold: to test the accuracy of the statements made in the literature; more specifically to evaluate electric-shock treatment in the affective psychoses or, more accurately, in the affective disturbances, since in many cases the patients in this study had not reached the psychotic stage; to develop a technic for patient-care or even for home-care so as to avoid hospitalization and commitment; and to build up a technic by which fewer shock treatments would be administered to the patient.

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MATERIAL AND METHODS

Thirty-six patients were treated: the diagnosis in 24 being depression or depressed obsessive state; in 9, schizophrenia; and in 3, chronic neurosis (Table 1). The average number of shocks was between five and six. In one case (Case 7), however, fifteen shocks were given in two sets of treatments, following which the patient had a complete remission for a month. He then lapsed back into an agitation, which improved greatly after six additional shocks.

An electrical apparatus, made especially for this purpose by Mr. Frederick T. Davis and one of us (L. F.), is constructed essentially as follows: It has a current source of a 60-cycle, alternating, low-frequency type, with a flexibility and range of control from about 50 to 130 volts and from about 50 to 750 milliamperes. This current is further regulated by means of a variac and a special electronic timing-device placed in the circuit for accuracy and safety. Special indicators on the panel are connected with pilot lights, which flash off and on when the current enters the machine and when it is flowing through to the patient. From two terminals on the panel there pass two wires, which are attached by means of insulated clips to the patient's contact electrodes. These metal, non-polarizable contact electrodes are circular in shape and about 5 cm. in diameter. A rubber, self-adjustable headband keeps them in contact with the patient's head in the temporal regions. Before application of the moistened electrodes, the resistance of the skin, a very important factor, is reduced by rubbing a paste containing 20 per

cent sodium chloride over each temporal region.

Before treatment was undertaken on human beings, this apparatus was used on rabbits and other animals for a sufficient time to ensure its safety.

By experimentation we learned that in the majority of patients, a voltage of 70 with a milliamperage of 350 to 500 delivered for 0.1 second was sufficient to produce convulsive reactions instantaneously or almost instantaneously. In 2 cases it was necessary to increase the time to 0.2 second to produce a complete convulsion. The convulsion lasts from thirty to forty-five seconds, which would be the equivalent of the phenomenon designated as "absence 4" by Kalinowsky and Barrera.[13]

The timer should be tested each day and, in fact, before each series of treatments. This can be done by setting the timer at one second and noting whether there is any real discrepancy between it and a split second stop watch. The voltage can be tested out by comparing one voltage indicator with the other. It is of special importance that the apparatus be warmed before each treatment, to make certain that it is running at full capacity, since it slows up definitely after a period of disuse. With these precautions this apparatus has worked very reliably, and this assurance is made the more definite by the fact that a dose (that is, voltage and time), once it has been established for a patient, gives a constant response.

One other caution should be mentioned: if the dose selected as a trial is insufficient, at least ten to fifteen minutes should elapse before another is given, since the resistance of the tissues diminishes markedly after a treatment, and comes back to normal only after such an interval.

TABLE 1. *Summary of Results of Electric-Shock Therapy.*

DIAGNOSIS	CASE NO.	AGE	SEX	NO. OF TREATMENTS	PERIOD OF TREATMENT	PLACE OF TREATMENT	RESULTS*
		yr.					
Depression or depressed obsessive state	1	40	F	3	3 weeks	Outpatient	Remission
	2	21	M	4	4 weeks	Outpatient	Remission
	3	36	F	4	4 weeks	Outpatient	Marked improvement to remission
	4	23	M	6	6 weeks	Outpatient	Great improvement
	5	33	F	4	3 weeks	Outpatient	Improvement
	6†	62	M	7	3 weeks	Hospital	Remission
	7†	64	M	9	4 weeks	Hospital	
				12	4 weeks	Hospital	Marked improvement after relapse
	8	48	F	3	2 weeks	Hospital	Remission
	9	27	F	7	3 weeks	Hospital	Shift to hypomania, remission
	10	60	M	4	2 weeks	Hospital	Remission
	11	60	M	4	10 days	Hospital	Remission
	12	55	F	3	1 week	Hospital	Remission
	13†	47	F	2	1 week	Hospital	No improvement
	14	48	F	3	1 week	Hospital	Remission
	15	48	F	5	1 week	Outpatient	Improvement
	16	42	F	3	3 days	Outpatient	Remission
	17	41	F	5	10 days	Outpatient	Much improvement
	18	29	M	2	2 days	Outpatient	Much improvement
	19	40	F	4	4 days	Outpatient	No improvement; hospitalized
	20	62	M	5	2 weeks	Outpatient	? improvement
	21	22	F	2	3 days	Outpatient	Remission
	22	33	M	3	1 week	Outpatient	Remission
	23	38	F	4	2 weeks	Outpatient	Remission
	24	55	M	4	10 days	Outpatient	Much improvement
Schizophrenia	25†	48	F	18	6 weeks	Hospital	No improvement
	26	23	M	8	3 weeks	Hospital	No improvement
	27†	35	F	1	1 week	Hospital	No improvement
	28	27	M	9	7 weeks	Hospital	Conduct improvement
	29†	22	M	13	4 weeks	Hospital	Temporary, though not substantial, improvement
	30	25	M	6	3 weeks	Hospital	No improvement
	31†	21	M	14	4 weeks	Hospital	No improvement
	32	34	F	9	2 weeks	Hospital	Slight improvement
	33	25	F	6	2 weeks	Outpatient	Conduct improvement
Chronic neurosis	34	33	M	2	5 days	Outpatient	No change, refused further treatment
	35	40	F	5	Long intervals	Outpatient	No improvement
	36	31	F	5	4 weeks	Outpatient	? improvement

*The term "remission" is used to indicate the recovery from the particular attack, since it is probably certain that future attacks are not averted by this treatment. By "marked improvement" is meant social recovery with some residual symptoms.

†These patients had previously received a series of Metrazol-shock treatments without resulting improvement.

RESULTS

The convulsions last from thirty to forty-five seconds, which is about the time of a full Metrazol shock. The dosage, however, can be graded to produce, first, unconsciousness without convulsion and, secondly, unconsciousness with a shorter convulsion. This is a real advantage in those cases in which injury has been sustained and in which it is desirable to continue the treatment without the convulsive reaction.

Our experience confirms the fact that there are few injuries if reasonable precautions are taken, and that the general bodily reaction is not so dis-

turbing as in Metrazol shock, since there is less effect on the pulse rate and the blood pressure. In general, the blood pressure drops for a very short period, and after a few seconds the pulse rate comes back to its normal level. It is also true that the period of apnea is not so long as with Metrazol shock.

There was no injury to the spine of any apparent consequence. We have not made routine x-ray examination. Two patients complained of backache; in these, x-ray films showed no fracture, and the patient recovered from the backache within ten days. No patient was disabled for any length of time by injury to the back.

Elderly patients with moderate degrees of arthritic changes around the shoulders have complained, after treatment, of considerable pain at the site of the disease. We have found no actual change of any disabling type as a result. This pain has usually disappeared within two weeks.

It is not quite true that patients have no dread of the electric-shock method. The patient does not remember the shock itself, and there is a retrograde amnesia for events occurring shortly before and after shock treatment; but the fact remains that in some way or other he was rendered unconscious, and because he learns sooner or later that this was done by electric shock, there is some dread, probably due to the general fear that is associated with being knocked unconscious. However, there is very much less dread than in Metrazol shock because, first of all, the actual treatment causes no pain and, secondly, the loss of consciousness ensues so rapidly that there is not the short agonizing hovering between consciousness and unconsciousness that ushers in the Metrazol convulsion and is usually remembered.

In 3 cases in which Metrazol shock had been tried and in which the administration was exceedingly difficult and consequently ineffective, electric shock produced a convulsion, with good results.

In 1 case in which the presence of coronary thrombosis and cardiovascular disease was proved by electrocardiographic examination and a well-established clinical history, electric shock was used despite the general risk. The patient was so agitated and so rapidly impairing his nutrition and general resistance that it was the considered opinion of both the consulting internist and the attending psychiatrist that the treatment offered less risk than the disease. This man received seven electric shocks in three weeks, and had a complete remission. He had been followed closely for ten years, and had had a previous attack that lasted three years; there was every indication that this attack was at least as formidable as the previous one. It can, we think, safely be assumed that the shock method markedly shortened the attack.

In the following 4 cases, few shocks at relatively long intervals were given.

Case Reports

Case 1. A 40-year-old woman had had three specific attacks under the observation and treatment of one of us (A. M.), each lasting from 6 months to 2 years. They were characterized by anxiety and depression of severe grade. The patient was given three shocks at intervals of 1 week. She improved after the second treatment. The treatment was discontinued at the end of the third, although she was not completely well. Within a week after the discontinuance of treatment, she was entirely well and has remained well since.

Case 2. A 21-year-old man (brother of the patient in Case 1), for 3 years had suffered from a moderately depressed state with hypochondriasis, which from time to time became definitely delusional. He believed that his eyes, because of a supposed abnormality, rendered other people nervous and caused them considerable agitation and mental distress, so that they would have nothing to do with him. This condition did not yield in the least to psychotherapeutic measures or to drugs such as sedatives, amphetamine sulfate, vitamins and hormones. The patient received four treatments spaced 1 week apart. Since he was still attending school, they were given on Saturday mornings at a private house, and he went home on Saturday afternoon, rested until Sunday noon, and went back to school on Monday. At the end of the fourth treatment, the patient was feeling very much better, and there seemed to be a steady progress toward recovery. He no longer has any hypochondriasis; the depression is much improved. There is still, however, a latent feeling of inferiority, which does not seem to handicap him.

Case 8. A 48-year-old woman was seen during her first depressive attack. This had lasted for a year, and she had made no progress toward recovery. In fact, she was probably worse at the period when treatment was initiated than at any previous time. The first two shocks were given within 3 days. By mischance the electric apparatus was not available for a week, when another shock was given. The fourth shock was to be given after 4 days, but since she appeared to be entirely well, in fact, somewhat hypomanic, — a very common occurrence after shock treatment of any kind, — treatment was discontinued. Since that time the patient has had a mild, though not disturbing, exhilaration, but has been able to go back to her duties and discharge them perfectly well.

Case 10. A 60-year-old man was first seen by one of us (A. M.) 8 years previously, at which time he had his first attack of depression. This lasted 8 months, and the patient did not completely recover. He went on, however, fairly adequately, with short attacks from time to time, and 1 month prior to admission entered into a major attack, in which he reached the stage of delusion formation, as well as marked depression, with failure in sleep, appetite and the visceral urges generally. His delusions were typical — that great harm was to befall him and his family and that there was a constant barrage of persecutions directed against him because of his misdeeds. He was given four shocks in a period of 2 weeks, at which time it was felt advisable to see what would happen without

further treatment, although he did not seem particularly improved. Within a week, however, he was very much better. At the present time he is cheerful, the delusions have disappeared, and there is an amnesia for the whole period of treatment as well as for 1 or 2 weeks of the period of his illness prior to treatment. This man had a slight back injury, from which he recovered entirely in 2 weeks.

Because of the experiences outlined above, we have modified our method of treatment as follows: Those patients who are not too actively psychotic are given outpatient treatment, that is, they go to a private house, which has been prepared for this purpose, receive their treatment, are attended by a nurse for a few hours and then go home. Two or three days are allowed to elapse, after which the patients are again seen; treatment is arranged within the next day or two. After the second treatment, a period of four to seven days is allowed to elapse to see whether improvement is commencing. If this improvement is not apparent, treatment is resumed. If at the end of the third or fourth treatment a favorable upward trend seems to be taking place, no further treatments are given, because we have learned that the recovery process, when once initiated, goes on very rapidly. Thus, in a twenty-three-year-old man (Case 4), who had an obsessive depressive state of at least six years' duration, six treatments scattered over a period of six weeks were sufficient to bring him to the state where the obsessiveness entirely disappeared; he is cheerful and active, and although residual symptoms are present, they are fading away, apparently by some natural process of recovery.

We have treated patients in whom the depressive state has been followed by a manic state that, although it was more comfortable for the patient, was not especially easy to handle. Thus, in a twenty-seven-year-old woman (Case 9), who was depressed for nearly a year, two treatments produced a hypomanic state. Continued treatment of the hypomanic state by the electric-shock method did not seem to do any special good, and it was therefore discontinued. The patient is now in the recovery phase of a manic state. The interesting transition from depression to the manic state while under treatment is significant in showing the biologic relation between the two phases. The mechanism of the transition is entirely unknown, and one can only speculate about its genesis.

Of the 24 patients with depressions or depressed obsessive states, all but 3 showed moderate to marked improvement or had remissions following electric-shock therapy.

Of the 9 cases of schizophrenia treated in this series, none were significantly improved so far as the essentials of the disease process are concerned. Conduct improved in 3. Delusions became less conspicuous. However, the retreat and the incapacity to meet the situations in life were only transitorily changed for the better. There is little evidence that either Metrazol or electric-shock therapy is of fundamental importance in schizophrenia except in relation to some of the catatonic states.

Three cases of neuroses of severe grade were treated. One of these patients was unwilling to continue the treatment after two shocks, because of the unpleasant failure of memory that manifests itself in almost all cases for a short time after shock therapy. The other 2 patients are still under treatment with results that are doubtful. These cases, however, had also resisted other forms of treatment.

Summary and Conclusions

Electric-shock therapy seems to be without appreciable danger. It is not recommended in cases of heart disease or hypertension except when there seems, on the whole, to be nothing to lose — that is, when the mental condition is desperate and threatens the life of the patient. In our cases no harm has followed. In one case of definite cardiac disease and in one of distinct hypertension, electric-shock therapy was of great value.

Although no shock therapy can be classed as pleasant, electric-shock therapy is the least disturbing to the patient and creates less fear and resistance to the treatment. It is also more expeditious and can be used in cases in which it is inadvisable to give Metrazol.

It is possible to use this treatment without hospitalization and by what we call the "outpatient method." There is no reason why it should not be used in the patient's own home with sufficient nursing attendance.

The psychoses of choice for treatment are the marked, continuous depressions. The value of the treatment in the hypomanic state is less certain. It has the same general value as Metrazol in the treatment of schizophrenia: a limited but useful value from the standpoint of control of the patient. It is too drastic a method to be used in the neuroses except in the chronic, obsessive and depressive types.

There is a disturbance of memory in many cases for some time after the treatment. This does not seem to be permanent or final. No neurologic sequelae of any kind have been observed in our patients.

It is probably of great advantage to give as few treatments as possible, to wait between treatments to see what progress is being made, and to allow

as much progress as possible to take place without further therapy. In other words, it may be necessary to give only three or four treatments for a complete remission to occur in a depressive state.

It appears that the shock therapy, especially electric-shock therapy, is of unequaled value in the treatment of the depressive mental states.

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TULAREMIA IN IMPORTED RABBITS IN MASSACHUSETTS*

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In recent years it has been the practice of various Massachusetts game clubs to stock their covers with cottontail rabbits imported from states west of the Mississippi River. On April 25, 1940, we were able to demonstrate the presence of tularemia in a rabbit imported from Missouri. The finding of a second diseased rabbit on November 16, 1940, this time from Arkansas, confirmed the fact that rabbits infected with tularemia are being introduced into Massachusetts. The importance of tularemia, its rapid spread among wild mammals, its ready transmission from animals to man, and the occurrence of three endemic human infections in Falmouth since 1937 warrant bringing these findings to the attention of Massachusetts physicians.

Tularemia

Tularemia, a disease of lower animals and man, is caused by a plaguelike bacterium, *Pasteurella tularensis*. The disease in man is characterized by the rapid onset of typhoidal symptoms and the associated development of an ulcerating lesion with local adenitis at the site of infection. The mortality rate is about 5 per cent.

Incidence in man. Since 1919, human infections have been recognized in forty-eight states and the District of Columbia, and since 1925, in ten foreign countries. The number of reported cases and deaths appears to be increasing. Up to 1924, only 15 cases had been reported. From 1924 to 1935, a total of 6206 cases occurred in the United States with 299 deaths, the highest incidence being in Illinois, Ohio and Virginia. In 1938, 2088 cases with 139 deaths were reported, and in 1939, 2200 cases with approximately 150 deaths.[1]

New England has been comparatively free from the disease, a total of 8 human cases having been reported: Maine, 1; Vermont, 0; New Hampshire, 1; Connecticut, 1; Rhode Island, 1; and Massachusetts, 4. The 4 Massachusetts cases included a man infected from a refrigerated rabbit shipped from Illinois in 1930 (no epidemiologic significance as an imported market rabbit)[2]; a ten-year-old girl at Falmouth in 1937 (evidently infected by a dog, which presumably had acquired the infection from rabbits)[3]; a six-year-old girl at Falmouth, bitten by a tick in 1938[4]; and a woman at Falmouth, bitten by a tick in 1939.[5]

Incidence in animals. The disease has been observed in a variety of animals. Human infection has been traced to twenty-four forms of wild life, though wild rabbits and hares account for over 90 per cent of infections in man. The hosts include wild rodents, other wild mammals, domestic mammals and game birds.

Transmission. Most human infections are acquired in handling diseased animals, chiefly rabbits, the organisms entering the body through wounds, superficial abrasions or the conjunctiva, usually during the skinning, dressing or dissection of the animal. Thus marketmen, hunters and housewives who dress rabbits become in-

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fected. The dissection of infected animals has caused 56 cases of infection in laboratory workers. Miscellaneous infections have been reported from the dressing of or from the bites of other animals. The eating of insufficiently cooked wild-rabbit meat has caused 20 cases, and water-borne epidemics have been reported in man in Russia and in beavers in Montana.[1]

The organism may also be transmitted from animals to man by the bites of insects. The Rocky Mountain wood tick (*Dermacentor andersoni*) has caused 53 human cases in Montana and surrounding states; the American dog tick (*D. variabilis*), 73, principally in the southern states; the deer fly (*Chrysops discalis*), 68 in Utah and neighboring states; and undetermined species of insects, 9. The rabbit tick (*Haemaphysalis leporis-palustris*) is the chief factor in the transmission of the disease from rabbit to rabbit.

Imported Rabbits

During the last two years, 219 rabbits imported by Massachusetts game clubs have been examined at our laboratories at the request of the Division of Fisheries and Game of the Massachusetts Department of Conservation. Post-mortem conditions permitted complete examination of only 136. These rabbits either died in transit or shortly after arrival in Massachusetts. In this series, previous to the discovery of the first rabbit with tularemia, 109 rabbits had been examined, with negative results. In the interval between the finding of the first and the second infected rabbit, 24 others showed no signs of tularemia. Also, no evidence of tularemia was found in a previous series of 194 imported rabbits examined in 1937. The presence of tularemia in 2 out of 330 rabbits, or 0.6 per cent, corresponds closely with the usually accepted incidence of 1 per cent infection among wild rabbits.

The existence of tularemia was demonstrated by the detection of lesions in the liver and spleen, by the production of the disease in guinea pigs, and by the isolation of the causative organism, *Pasteurella tularensis*. Our findings were verified from the original material by Dr. Edward Francis, of the National Institute of Health, United States Public Health Service, who obtained further confirmation by agglutinating the organism with known tularemic serum.

From 1937 to 1940, 24,689 imported western rabbits (24,474 cottontails and 215 jacks) were liberated in Massachusetts. Of these 7091, or 28.7 per cent, were released in the tick-infested counties of southeastern Massachusetts (Barnstable 1807, Bristol 3329, Dukes 142, Nantucket 340 and Plymouth 1473). The two tularemic rabbits were found in the following shipments: 51 rabbits (9 dead) from Rutledge, Knox County, Missouri, received by the Rockdale Rod and Gun Club, of Northbridge, in April, and 84 rabbits (25 dead) from Berryville, Arkansas, received by the Weymouth Sportsmen's Club in November.

Discussion

The imported rabbits are admitted to Massachusetts under certification by the accredited health authorities at the shipping sources. The certificates state that there has been no epidemic of tularemia or rabbit fever in the last two years in the counties in which the rabbits are trapped, and that these counties are free from contagious and infectious rabbit diseases. The presence of tularemia in certified rabbits from two states indicates that such guarantees are inadequate to prevent the inclusion of tularemic rabbits in these shipments. Since tularemia exists in practically all states exporting rabbits, the best safeguard against its introduction into Massachusetts is the enactment of legislation prohibiting the importation of rabbits. Such legislation has been enacted by at least three states — Connecticut, New Hampshire and Ohio.

Not all infected rabbits die during shipment. Those recently infested with diseased rabbit ticks or possibly infected by close contact with diseased rabbits before and during shipment may be liberated. It is fair to assume that tularemia has been present in a fraction of 1 per cent of the 24,689 rabbits so far liberated. Since the disease is transmitted from rabbit to rabbit by the rabbit tick, it is likely to spread among the native rabbits and also among other wild mammals and birds, thus endangering the supply of indigenous rabbits and wild game.

The American dog tick, *D. variabilis,* a known vector, is abundant in southeastern Massachusetts, south of Plymouth and east of Marion. The larvae and nymphs feed on small rodents, particularly field mice, and the adults on larger mammals and man. Thus this tick is capable of transmitting tularemia to both animals and man, since infection acquired by the larva or nymph persists in the adult and may even be transmitted to subsequent generations. A widespread infection among these ticks would result not only in damage to game animals but also in danger to man, since, although tularemia is most frequently acquired through contact with diseased rabbits, it is also transmitted by infected ticks.

The 3 cases of human infection reported from Falmouth since 1937, 2 from bites of ticks, indicate the presence of tularemia in the wild animals and ticks of that region. It is an interesting

coincidence that these endemic human cases developed after imported rabbits were first liberated in 1937. The establishment of other endemic foci in native wild animals from imported rabbits appears inevitable, and additional cases of human infection are to be expected in tick-infested areas.

Summary and Conclusions

The presence of tularemia has been demonstrated for the first time in imported rabbits liberated by Massachusetts game clubs. Infected rabbits have been found in shipments from Missouri and Arkansas.

Certification at the shipping source that these rabbits are from tularemia-free districts does not guarantee freedom from this disease.

The importation of tularemic rabbits threatens to establish endemic foci in native rabbits and other wild game that may ultimately reduce the wild-life population.

Since 1937, 24,689 imported rabbits have been liberated in Massachusetts. The first three endemic cases of human tularemia in this state have been reported since 1937.

In the interests of public health the further importation of rabbits should be prohibited by legislation, even though an endemic focus of tularemia appears to have been established.

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HEALED STAGE OF PERIARTERITIS NODOSA*

Report of a Case

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PERIARTERITIS nodosa is characterized by a multiplicity of clinical and laboratory features. The symptomatology in any one case depends on the stage of the disease and the organ predominantly involved. In general, however, most cases manifest a strong allergic tendency. This syndrome was first described by Kussmaul and Maier[1] in 1866, and since that time numerous isolated cases have been reported in the literature; the etiology is still obscure, however, and the primary locus of origin of the process in the arteries is not settled. Rackemann[2] reviewed 245 cases in the literature, and found asthma in less than 10 per cent, and high eosinophilia — over 25 per cent — in about 14 per cent. He stated that there is insufficient evidence at present to say that periarteritis nodosa is an allergic disease. Cohen, Kline and Young,[3] Swift, Derick and Hitchcock[4] and Harkavy[5] favor an allergic or hyperergic basis for the disease. Because the disease is not confined to the adventitia of the vessels, Dickson[6] has appropriately changed the name to "polyarteritis nodosa."

The classification devised in 1930 by Arkin[7] is interesting. He divided the disease into four different stages, based on the histologic structure of the transformations in the arteries. He included in his series a "healed granulation-tissue stage," with a report of one case. In this case, the histologic changes, which were considered characteristic, were: intimal proliferation, with new formation of elastic fibrils, leading to stenosis or even complete occlusion; extensive destruction of the media, including the elastica interna, or of the entire vessel wall, with aneurysm formation and thrombosis — the thrombosis was followed by complete organization, with occasional deposition of hemosiderin; a periarterial healed granulation-tissue mantle, consisting of dense fibrous connective tissue containing capillaries and hemosiderin deposits; extensive destruction, with even aneurysm formation, in arteries, as well as high-grade intimal proliferation; healed infarct scars in most organs. This case presented the clinical picture of cardiac insufficiency and renal insufficiency.

In 1939 Weir[8] reported a case of polyarteritis nodosa in which all stages of the disease, from the earliest acute to healed lesions, were present at the time of death.

Case Report

H. M., a 49-year-old carpenter, was admitted to the Maine General Hospital on October 28, 1937. He stated

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†Associate chief, Medical Service, Maine General Hospital.

‡Associate pathologist, Maine General Hospital.

that he had always been well until December, 1936, when he had influenza. He became afebrile within a few days, but developed a wheezy cough, which persisted until the following June. During the summer months he worked at his trade. Four weeks before admission to the hospital the cough reappeared, and he started to lose weight. A physician made a diagnosis of asthma. After failing to respond to treatment at home, he was admitted to the hospital.

On examination, the patient was sitting upright in bed, with slightly labored wheezy respirations. The temperature was normal. The pupils and fundi were normal. There was no nasal obstruction. No skin lesions were seen. The heart rate was 110 and regular. There was no cardiac enlargement, and there were no murmurs. The blood pressure was 140/90. The radial arteries apparently were not sclerosed, and the pulsations in both dorsalis pedis vessels were good. Chest examination showed limited expansion, many musical rales and prolonged expiration. The urine had a specific gravity of 1.018, with 40 mg. of albumin per 100 cc. and no casts. Examination of the blood revealed a red-cell count of 4,400,000 with a hemoglobin of 90 per cent, and a white-cell count of 39,500 with 55 per cent neutrophils, 32 per cent eosinophils and 13 per cent lymphocytes. The blood Kahn and Hinton reactions were negative. Skin tests for foods and pollens were unsatisfactory, since the patient reacted to all. The Bachman skin test for trichinosis was negative.

The symptoms and chest findings remained the same during the next 3 weeks. Partial temporary relief was obtained with adrenalin. A vesicular eruption appeared on the forehead and extremities. This was thought to be due to iodides, which had been given for cough, and gradually disappeared after the iodides were discontinued. A white-cell count on November 4 was 43,600, with 73 per cent eosinophils. On November 25, the patient complained of pain in the left axilla. Two days later, very few signs of asthma could be heard, but there were many moist rales over the left base, with a decrease in the percussion note. The sputum showed no pneumococci. The temperature, which had been normal, rose to 103°F. X-ray examination showed increased density in the left base. The white-cell count was 34,000, with 65 per cent eosinophils. The temperature continued from 99.5 to 102°F. The cough became more productive, and on December 16 x-ray study still showed increased density at the left base. A small lung abscess was considered probable, and postural drainage increased the sputum output. The white-cell count fell to 12,000, with only 3 per cent eosinophils. The productive cough continued, but the patient was able to eat a regular diet, in spite of an afternoon temperature of 100°F., which persisted until 10 days before discharge. On January 21, 1938, the left lower-stem bronchus was injected with lipiodol. There was considerable puddling of the oil in an area just above the left diaphragm and behind the left border of the heart. The bronchi in this area were apparently dilated, leading to the conclusion that this represented a bronchiectasis. The patient, at that time, was comparatively free of asthma, which had been so troublesome during the 1st month of hospitalization. Postural drainage was continued. The amount of sputum, which at one time measured 290 cc. daily, gradually decreased, and at the time of discharge on February 15, it was about 30 cc. daily. There was an apparent increase in weight, although the patient was not weighed. The red-cell count was 4,100,000 with a hemoglobin of 68 per cent, and the white-cell count was 12,400 with 72 per cent neutrophils, 3 per cent eosinophils and 25 per cent lymphocytes. Examination of the urine showed a specific gravity of 1.012 (before breakfast), 5 mg. of albumin per 100 cc., no sugar, a few hyaline casts and 6 to 8 red cells per high-power field. The patient was discharged with final diagnoses of bronchial asthma, bronchopneumonia, lung abscess and bronchiectasis. However, in reviewing the case at the following monthly medical-staff meeting, periarteritis nodosa was considered to be a strong probability.

The patient was readmitted on November 27, 1938. He stated that he had had a "fairly comfortable" summer, but that for the previous month two or three mild asthmatic attacks had occurred daily. They were easily controlled with inhalations of a 1:100 solution of adrenalin chloride. His acute illness had begun 1 week before admission, during which time frequent hypodermic injections of a 1:1000 solution of adrenalin chloride were necessary to control the asthma.

The appearance of the patient on admission was essentially the same as that on his first admission. The temperature was 103°F. The chest was full of musical rales. There was no dullness on percussion. X-ray examination revealed irregular rectangular masses in the midhilus regions, with extension outward toward the periphery on both sides. Opinion was reserved by the roentgenologist. The white-cell count was 31,600, with 31 per cent eosinophils. Urine examination showed 400 mg. of albumin per 100 cc., with many hyaline and granular casts, and 10 to 20 red blood cells per high-power field. The blood pressure was 148/90. The cardiac rhythm was regular, and the rate was 110. A small piece of pectoralis major muscle removed for examination failed to show evidence of vascular disease. A bone-marrow biopsy showed 41 per cent eosinophils, with an otherwise normal smear.

The temperature gradually returned to normal at the end of 3 weeks. The asthmatic attacks decreased in number and in severity, and with the disappearance of the fever, further medication for this condition was not necessary. However, the urine still contained a large amount of albumin, with both hyaline and granular casts and numerous red blood cells. The blood urea nitrogen remained normal. Examination of the blood showed a red-cell count of 3,130,000 with a hemoglobin of 58 per cent, and a white-cell count of 27,400 with 43 per cent neutrophils, 45 per cent eosinophils, and 12 per cent lymphocytes. The chest was clear except for a decrease in breath sounds over a small area in the left base. Following an afebrile period of a week, the patient was extremely desirous of going home, and was discharged on December 24 with a diagnosis of probable periarteritis nodosa.

A third admission occurred on April 10, 1939, when the patient was admitted to the Surgical Service. Following the last period of hospitalization, he had been in comparative good health and had required no medication for asthma. During the previous winter, a small, easily reducible right inguinal hernia had appeared. During the 3 days before entry he had been unable to reduce the hernia, and his bowels had not moved. On the morning of admission, the vomitus was said to have been fecal in character. Operation was performed immediately under spinal anesthesia. The surgical records show that the operation was performed without difficulty, and that the bowel was not gangrenous. Twelve hours later the temperature was 104°F. There was very little cough, and chest examination was essentially negative. From a small amount of sputum, which was all that could be obtained, a Type 2 pneumococcus was cultured. Although x-ray films taken with a portable machine failed to show con-

solidation, sulfapyridine was given, and the temperature returned to normal at the end of 48 hours. Examination of the blood revealed a hemoglobin of 65 per cent, and a white-cell count of 14,800, with only 2 per cent eosinophils. The urine still contained a large amount of albumin, with both hyaline and granular casts and red blood cells. The blood pressure was 120/80. The patient was discharged by the Surgical Service with a diagnosis of strangulated right inguinal hernia.

The patient was admitted for the fourth and last time on May 8, 1940. During the previous summer he had gained 15 pounds in weight, and had been able to work at his trade for 6 weeks. In January, a "cold" was contracted. This was followed by a 2 months' attack of asthma, which was controlled by inhalations of a 1:100 solution of adrenalin chloride. The asthma ceased rather abruptly, but the patient's strength did not return. Instead, there was increasing weakness with dyspnea not accompanied by wheeziness. The family noticed an increasing pallor. The bowels were looser than usual, and there was nocturia, three to five times a night. Nausea had been present most of the time during the previous month.

The clinical picture was that of chronic renal insufficiency with impeding uremia. Air hunger was evident. Cyanosis was not present. There was a distinct pallor of the skin and mucous membranes. The face was slightly puffy. There was no other evidence of peripheral edema. Many moist rales were heard over both lung bases. Asthma was not present. The temperature was 99°F. The heart rate was 100 and regular. The blood pressure was 164/88. The liver edge was thought to be three fingerbreadths below the right costal margin. The spleen could not be felt. The urine examination showed a specific gravity of 1.010, with 200 mg. of albumin per 100 cc. and both hyaline and granular casts and red blood cells in the sediment. The blood urea nitrogen was 115 mg. The red-cell count was 1,900,000 with a hemoglobin of 30 per cent, and the white-cell count 10,800 with 83 per cent neutrophils, 2 per cent eosinophils and 15 per cent lymphocytes. Pulmonary edema gradually increased, in spite of an attempt at parenteral digitalization, and death occurred 6 days after admission.

Autopsy. The heart was slightly hypertrophied, weighing 400 gm. The right lung weighed 725 gm., and the left 525 gm., and there was congestion and atelectasis of the more dependent portions. The spleen weighed 210 gm.; the tissue was firm, and there was a distinct subcapsular zone of gray tissue 3 mm. thick; the pulp was dark red and contained an occasional gray firm focus up to 8 mm. in diameter, resembling a tubercle. The liver weighed 1875 gm. and, except for a scarred subcapsular focus 0.5 cm. in diameter, was not remarkable. There was congestion of the gastric mucosa. In the first portion of the duodenum an area 1 cm. in diameter in the mucosa was granular, and the wall thin. The remainder of the gastrointestinal tract merely showed congestion of the mucosa. The right kidney weighed 75 gm., and the left 90 gm. The capsules stripped with difficulty, to reveal a pale yellow-gray, finely granular surface, with occasional elevated coarse granules. The cortex varied from 2 to 4 mm. in thickness. The pelves and calyxes were not dilated. A few scattered atheromatous deposits were present in the aorta. The brain weighed 1300 gm. and was essentially normal.

Microscopic examination reveals lesions in the small and medium-sized arteries of the duodenum, spleen, kidneys, heart and lungs that are characteristic of the healed end stage or scar-tissue stage of periarteritis nodosa, as described by Arkin.[7] The involved vessels are either completely or almost completely replaced by dense scar tissue, with marked narrowing or absence of lumens (Fig. 1). As a result of this process in the kidney, practically all the glomeruli are sclerosed. In only one vessel of all the tissues studied is there any evidence of activity. That is in the kidney, where one medium-sized artery shows occlusion of the lumen by scar tissue, in which fibrin and leukocytes are scattered through the wall, with a perivascular lymphocytic and polynuclear infiltrate.

This patient died of renal failure and uremia, resulting from a healed arterial and arteriolar process in the kidneys.

In the case described above, the lesions in the vessels of the spleen, kidneys, duodenum, lungs and heart were all healed and were characterized

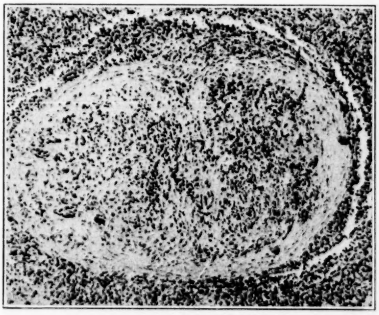

FIGURE 1. *Low-Power Photograph of One of the Occluded Arteries in the Spleen.*

by collagenous thickening of the vessel walls to the extent that in the spleen and kidneys many of the lumens were completely occluded; occasionally there were hemosiderin deposits and periarterial lymphocytic infiltrations. In only one vessel in all the sections studied was there any evidence of activity in or about the vessels.

In this single case, we are unable to say in which coat of the vessels the disease began, or what the etiologic factor was, but the presence of fever, leukocytosis, eosinophilia and asthma is in favor of an inflammatory process, possibly on a hyperergic basis. Clinically there were periods when the patient was symptom free, a fact that suggests some resistance to the allergic stimulus. The vascular processes did heal, but by their very nature resulted, especially in the kidney, in an ischemic process that, once initiated, was progressive and not reversible. In such cases, the more

completely healed and fibrotic the vessels become, the more occlusion takes place, with ischemic necrosis occurring in structures dependent on these vessels for blood supply.

Summary

A case of periarteritis nodosa is presented in which the vascular lesions were healed at the time of death.

The cause of death was renal insufficiency.

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ORTHOPEDICS IN NEW HAMPSHIRE*

Ezra A. Jones, M.D.

MANCHESTER, NEW HAMPSHIRE

THIS meeting is of historic importance to the New Hampshire Medical Society, and because of this, I feel it is of interest at the present time, and probably will be in the future, to record the history of organized orthopedics in New Hampshire during the last quarter century, especially as it relates to crippled children. Moreover, the president of this society is expected to make an annual address, and unfortunately the election to this position does not invest me with oratorical or oracular powers. Therefore, I should like to talk about orthopedics, because that is the only work I have done for the past twenty-five years.

Although something has always been accomplished in this state for the relief of crippled children, orthopedic surgery itself, one of the newer specialties of medicine, did not attract many to it until after World War I. In 1923 in the United States there were 327 surgeons who devoted their time exclusively to orthopedics, in 1940 there were 1077. But even before this country entered World War I, New Hampshire was organizing for orthopedic work.

In 1914 the District Nursing Association of Manchester, an organization supported by private subscriptions, began holding clinics every two weeks in a room on Lake Avenue here in Manchester. In the beginning, the patients were referred to the clinic by local physicians and city nurses, but later, physicians in surrounding communities began sending their patients there. Dr. W. Russell MacAusland, of Boston, came up every fortnight to supervise the orthopedic work. Growth of interest was constant.

In 1925 the records show that 1200 patients, representing twenty-six towns in this state, had visited the clinic. At that time there were no funds for hospitalization. But later the State did appropriate $2500 for braces. Some money also was received from various societies. In this connection I want to emphasize the philanthropy of the service clubs in supplying funds and the generosity of the hospitals in providing free beds. In that period, so meager were our physical resources, it was necessary to do manipulations and plaster work at the district-nursing rooms. We have gone a long way since then, both in financing methods and in clinic facilities.

There also is value in noting the type of cases that came to the clinic in those early years. Most of them were of long standing, with marked contractions and deformities. It will be recalled that infantile paralysis was prevalent at that time, and seemed to be of a type more virulent than at present — that is, more muscle groups were involved than in the cases we are seeing now. As time has gone on, these cases have been recognized earlier, and deformities, because of prompt treatment, are therefore less marked.

Next in number to infantile-paralysis cases, came those of tuberculous bone and joint disease. In the period of which I speak, patients came to the clinic with marked bone destruction, and in the spinal cases, kyphosis was nearly always present. Today, owing to improved hygienic conditions, bone tuberculosis is rather infrequent, and its early recognition

*Presidential address delivered at the annual banquet of the New Hampshire Medical Society, Manchester, May 14, 1941.

makes treatment possible before deformities occur. This also is true of the deformities caused by rickets. In 1920, operations for bowlegs were performed frequently. Today, thanks to our better knowledge of diet, an osteotomy for bowlegs is rarely done.

Another decrease is noted in birth injuries, especially obstetric paralysis of the arm. In the first eight years, we had 24 cases of obstetric paralysis; in the last fifteen years, there have been only 18. This is, of course, due to improved obstetric technic, and shows the effect of medical advance over twenty-five years.

Tremendous benefit also has resulted from the interest of laymen. An outstanding instance is the part so willingly played by the Rotary Club of Nashua. In 1921 this club sponsored a weekly crippled children's clinic, which has continued ever since. It has been of immeasurable benefit not only in Nashua, but in the towns of the southern part of the State. Its record of achievement indicates that 1124 patients have been treated at the clinic since 1921; and that twenty-eight towns have taken advantage of the facilities available. Interest in this work grew until in 1939 a building was erected that serves both as rooms for the weekly clinic and as headquarters for the New Hampshire Crippled Children's Society. In addition, the Rotary Club of Keene has practically underwritten the work that is done for crippled children in Cheshire County.

Mention of the New Hampshire Crippled Children's Society prompts me to say that the work in behalf of these youngsters had its greatest impetus in 1936, when this society was formed. This is a branch of the International Crippled Children's Society, and was founded by men and women who had been interested in the work in New Hampshire for many years. Easter Seals, generously purchased by the public, provide a measure of the necessary funds. Other money is received from private contributions. Approximately $12,000 is available from these two sources. Additional funds became available in 1937 when the society brought to the attention of the legislature the need of more funds for the work among crippled children. The legislature was prompt to appropriate $11,000 to the State Board of Health, the money to be used among the crippled children of the State. That sum was matched by the federal government, thus bringing the amount available from the State Board of Health to $22,000. This year Governor Blood has raised the appropriation in his health budget. This will render further help.

I want to speak, too, of the President's Ball Fund for Infantile Paralysis, which has raised about $6000. This sum is handled by a special board made up in part by members of the New Hampshire Crippled Children's Society and of the State Board of Health.

The arrangements of these three groups — the President's Ball Fund, the New Hampshire Crippled Children's Society and the State Board of Health — are such that there is very little duplication of work. The fund of the State Board of Health is under federal regulation and designates the type of case and the age of the patient to be treated, the age limit being twenty-one. The President's Ball Fund is used for infantile paralysis only, but there is no age limit. Neither of these two organizations can supply transportation either to or from clinics or hospitals. However, the New Hampshire Crippled Children's Society is able to use its funds in any way the board sees fit, and therefore supplies the aid the other two groups cannot. Thus, thanks to the collaboration of the three organizations, coordinated aid to all types and all ages of cripples is made possible.

Since the organization of these three groups, regular clinics have been established, and two state nurses, especially trained in orthopedic work, are available. Clinics are held in Manchester and Nashua every week, in Concord every five weeks, in Laconia every two months and in Littleton every three months. At these clinics, examinations are made, records are kept, and some treatments are given. State nurses attend all clinics, do follow-up work at patients' homes and see that the patients are returned to the clinic nearest their homes for observation at the proper time, or to hospitals for operation.

The average attendance at these clinics is about 30, but the high number at any one has been 57 patients. Since the start of the state work and up to May 1 of this year, 1878 patients under twenty-one have been treated or are under treatment. This number, together with the approximately 600 patients who are not on the state-board records, show, I believe, that New Hampshire, taking into consideration the comparatively small amount of funds available, is doing a class of work among crippled children that is not exceeded by any other state.

These results have only been made possible by the many doctors, nurses and laymen who have been interested in the work. I wish it were possible for me to be specific and name all those who have contributed their support to this program. This cannot be done, however, but they all have the satisfaction of knowing that efficient work has been effected and that machinery has been organized which will carry on this work for long years to come.

795 Elm Street

MASSACHUSETTS MEDICAL SOCIETY

PROCEEDINGS OF THE COUNCIL

Annual Meeting, May 21 and 22, 1941

THE annual meeting of the Council of the Massachusetts Medical Society was called to order at 10:30 a.m. in the Swiss Room of The Copley-Plaza, Boston, on Wednesday, May 21, by the president, Dr. Walter G. Phippen, Essex South; 263 councilors were present (Appendix No. 1).

The records of the special meeting of April 9, 1941, as published in the May 8, 1941, issue of the *New England Journal of Medicine* were presented by the Secretary *pro tempore* and approved by the Council.

The following nominating councilors answered to the roll call by the Secretary *pro tempore*: W. D. Kinney, Barnstable; P. J. Sullivan, Berkshire; W. H. Allen, Bristol North; E. F. Cody, Bristol South; F. W. Snow, Essex North; F. J. Barnard, Franklin; A. G. Rice, Hampden; W. J. Collins, Hampshire; R. R. Stratton, Middlesex East; Dwight O'Hara, Middlesex South; D. D. Scannell, Norfolk; W. G. Curtis, Norfolk South; W. H. Pulsifer, Plymouth; W. B. Breed, Suffolk; R. P. Watkins, Worcester; and B. P. Sweeney, Worcester North. No nominating councilors or alternates from the Essex South and Middlesex North districts responded.

Dr. J. Harper Blaisdell, Middlesex East, made the following motion:

> That if and when we adjourn it be until Thursday, May 22, at the end of the Annual Discourse, which follows the annual meeting of the Society.

Dr. Phippen explained that the motion was necessitated because of the proposed changes in the by-laws creating the position of president-elect, since this officer could not be elected until after the changes had been adopted at the annual meeting of the Society. The motion was seconded by Dr. Charles E. Mongan, Middlesex South, and was passed by unanimous vote.

The nominating councilors then retired.

Reports of Standing Committees

State and National Legislation

The chairman, Dr. Henry C. Marble, Suffolk, presented an informal report.

Dr. Marble spoke of the bill specifying that the requirements for admission to the practice of medicine in Massachusetts be the same as those of the National Board of Medical Examiners. This bill was approved by the Society and opposed by the secretary of the Board of Registration in Medicine; it was given "leave to withdraw."

He then said that the bill requiring that barbiturates be only sold on prescription, which was approved by the Society but opposed by the druggists' lobby, was defeated; and added that the bills concerning premarital examination, which were, in general, approved by the Society, were still in committee.

He added that the bill to place a medical officer in the Department of Industrial Accidents, which was approved by the Society and opposed by the American Legion and the American Federation of Labor, was dropped.

The bill permitting the creation of a medical-service corporation, sponsored by the Society, was reported by Dr. Marble to have been approved by the lower body of the Legislature and awaited approval by the Senate.

He stated that the bill petitioning a separate board of registration for the osteopaths had been withdrawn, and that those asking for a postponement of the effective date of the Approving Authority had also been withdrawn.

In regard to the bill sponsored by the Nurses' Association to create a separate board to control various nursing activities, Dr. Marble said that the committee had agreed with certain hospital authorities that such a board should be under the advisory control of a supervisory board, composed chiefly of physicians. This suggestion, however, was not incorporated in the bill as presented. He stated that the committee had been told that the bill had been entirely rewritten in the legislative committee.

Dr. Marble said that the perennial antivaccination bill had been given "leave to withdraw."

The bill to prohibit the sale of ethyl alcohol except on prescription was favored, but strongly opposed by the druggists' lobby, and defeated 110 to 87. Likewise, the committee's efforts to support the antifireworks' bill were of no avail.

Dr. Marble concluded by stating that all efforts of the committee had been of the nature of "sniping" and that it seemed to him that, in the future, the Society should take the initiative on legislative matters pertaining to medical care.

It was moved that the report be accepted, but Dr. Mongan brought out the point that, according to the by-laws, the report of a standing com-

mittee should be an official report by the committee rather than an informal report by the chairman. During the discussion that followed Dr. Marble acknowledged that the report as given had not been signed by the members of his committee. Dr. Mongan moved that the report be tabled until such a time as the committee made a written report. The motion was seconded, and eventually carried, 96 to 90.

Dr. Charles C. Lund, Suffolk, moved that Dr. Marble and his committee be thanked for their efforts and for their informational report of progress. This was seconded. After some discussion, the motion was passed.

Membership

The report (Appendix No. 2) was presented by the chairman, Dr. G. Colket Caner, Suffolk. It was approved by the Council.

Ethics and Discipline

The chairman, Dr. Robert L. DeNormandie, Suffolk, presented the report (Appendix No. 3), which was accepted by the Council.

Medical Education and Medical Diplomas

The report (Appendix No. 4), presented by the chairman, Dr. John P. Monks, Suffolk, was accepted by the Council.

Public Health

The chairman, Dr. Francis P. Denny, Norfolk, presented the report (Appendix No. 5), which was approved by the Council. He then moved that the Society adopt the resolution contained in the report of the committee; this was seconded and so voted.

Medical Defense

The report (Appendix No. 6), presented by the chairman, Dr. Arthur W. Allen, Suffolk, was accepted.

Arrangements

The report (Appendix No. 7) was read by the Secretary *pro tempore* and was accepted.

Others

There were no reports from the Committee on Financial Planning and Budget, Committee on Permanent Home and Committee on Publications.

REPORTS OF SPECIAL COMMITTEES

Public Relations

The secretary, Dr. Elmer S. Bagnall, Essex North, presented the report (Appendix No. 8), which was accepted, together with the recommendations.

Postgraduate Instruction

The report (Appendix No. 9), copies of which had been distributed to all members of the Council, was referred to by the chairman, Dr. Frank R. Ober, Suffolk. He called attention to the need for all members of the Society to co-operate to guarantee the success of the New England Postgraduate Assembly. The report was accepted.

Physical Therapy

The chairman, Dr. Franklin P. Lowry, Middlesex South, stated that there was no formal report but that the committee desired to call attention to the fact that a clinic of physical therapy had been established at the Massachusetts General Hospital and that the director, Dr. Watkins, had been made an assistant professor of medicine at the Harvard Medical School. The committee hopes, he added, that this will serve to lay a broad foundation for the future of physical therapy. The informal report was accepted.

Expert Testimony

The chairman, Dr. George L. Schadt, Hampden, reported that some progress had been made but that no formal report was warranted. The President declared that the report would be considered as accepted.

Industrial Health

The report (Appendix No. 10) was presented by the chairman, Dr. W. Irving Clark, Worcester, and was accepted.

Army Medical Library and Museum

The report (Appendix No. 11) was read by the Secretary *pro tempore* and was accepted.

WPA Records

The chairman, Dr. Guy L. Richardson, Essex North, presented the report (Appendix No. 12), which was accepted. Dr. Lund moved that the physician referred to in the report be brought up before the Committee on Ethics and Discipline; this was seconded. After some discussion, chiefly concerned with the fact that the physician was only one of many, the motion was defeated. Dr. Conley brought up the question whether the WPA was supposed to maintain a list of physicians recommended by the local medical society. Dr. Richardson replied that Mr. Burns, the State Compensation Officer, had asked for a list of physicians qualified to render service in severe accident cases but that the committee did not consider itself qualified to issue such a list and suggested that every physician licensed to practice in Massachusetts was so qualified.

Restoration to Fellowship

The Council voted to approve the reports of the committees recommending restoration of fellowship, with the usual provision regarding payment of dues, to twelve former members of the Society (Appendix No. 13); no action was recommended by the committee appointed to consider the application of one former member.

Nominating Committee

Dr. Allen G. Rice, Hampden, temporary secretary of the committee, presented the following list of nominations, which was read by the Secretary *pro tempore*:

For president: Frank R. Ober, Suffolk.
For vice-president: Edward P. Bagg, Hampden.
For secretary: Michael A. Tighe, Middlesex North.
For treasurer: Charles S. Butler, Suffolk.
For orator: William B. Castle, Suffolk.

There being no further nominations, it was voted that the nominations be closed and that the Secretary *pro tempore* cast one ballot for the nominated officers. The Secretary *pro tempore* announced that he had cast the ballot, and the officers were declared to be duly elected.

APPOINTMENT OF COMMITTEES

The President then announced his nominations for appointment to the various standing committees for 1941–1942. These nominations, with the exception of those for the Committee on State and National Legislation, were duly approved by the Council (the list will be published with the proceedings of the Society in the July 3, 1941, issue of the *Journal*).

As members of the Committee on State and National Legislation, the President nominated the following: H. C. Marble, Suffolk, chairman; B. F. Conley, Middlesex South; C. A. Robinson, Suffolk; E. M. Chapman, Suffolk; L. M. Felton, Worcester. Dr. Norman A. Welch, Norfolk, nominated D. L. Lionberger, Norfolk. Drs. David L. Halbersleben, Charles J. Kickham and Francis P. McCarthy, Norfolk, and Dr. Conley spoke in favor of the retention of Dr. Lionberger on the committee. Tellers were appointed, and the ballots distributed. In reply to a question whether a ballot would be thrown out if less than five names were included, the President replied that it could not, but that he assumed that each councilor would vote for five members. The tellers retired to count the vote.

The Council approved the appointment of committees to consider petitions for restoration to fellowship of two former members of the Society (Appendix No. 14), it being understood that these committees would not function if the proposed changes in the by-laws were accepted at the annual meeting of the Society.

The appointment of Dr. Fletcher H. Colby as representative from the Society to the Hospital Council of Boston and that of Dr. A. Warren Stearns to confer with the Committee on Medical Health for Defense were confirmed.

INCIDENTAL BUSINESS

It was voted that the Secretary be authorized to issue a new copy of the by-laws, provided the proposed changes were accepted at the annual meeting of the Society.

The action of the censors of the Plymouth District Medical Society in acting favorably on the applications of Dr. Bernard H. Beuthner, of Middleboro, and Drs. Walter Goldstein and Molyneaux P. Mathews, of Brockton, was approved, these names having been received by the Secretary *pro tempore* too late to be included in the official list of applicants that was published in the *Journal*.

Dr. Monks moved that the thanks of the Council be extended to Dr. DeNormandie for his work as chairman of the Committee on Ethics and Discipline; this was seconded and unanimously voted.

The meeting adjourned at 12:45 p.m., to reconvene at the close of the annual meeting of the Society on May 22.

* * *

The reconvened meeting of the Council was called to order in the Sheraton Room of The Copley-Plaza at 12:35 p.m. on Thursday, May 22, by the President, following the annual meeting of the Society. No attendance was taken, but approximately 150 councilors were present.

Dr. Ralph R. Stratton, Middlesex East, a member of the Nominating Committee, presented the name of Dr. George L. Schadt, Hampden, as president-elect. It was voted that the nominations be closed and that the Secretary *pro tempore* cast one ballot for the nominated officer. This was done, and Dr. Schadt was declared to be duly elected.

Dr. Leroy E. Parkins, Suffolk, then reported the vote for the Committee on State and National Legislation as follows: Dr. Marble, 148; Dr. Conley, 173; Dr. Robinson, 149; Dr. Chapman, 140; Dr. Felton, 121; Dr. Lionberger, 159. The President declared Drs. Marble, Conley, Robinson, Chapman and Lionberger elected. As his parting words, he urged that the right and privilege of the Council to make nominations from the floor for positions on standing committees be exercised with great caution and discrimination, since

the nominations made by the president of the Society, whom the Council elects and in whom it is supposed to place its trust, carry with them an intimate knowledge of the work of the committees and of the welfare of the Society.

Dr. Tighe then presented a resolution (Appendix No. 15) requesting the appointment of a committee by the American Medical Association, to be known as the Committee on Legal Medicine; he moved its adoption, and it was so voted.

The matter of the tabled report of the Committee on State and National Legislation was brought up. The Secretary *pro tempore* said that he had not received a report from the committee; Dr. Marble was not present. Dr. Lund, former chairman of this standing committee, stated that since he had frequently made informal reports of the type presented by Dr. Marble and since these had always been accepted without question, he believed the report should be accepted. Dr. Mongan called attention to the fact that, if the constitution and by-laws of a chartered organization are not properly followed, its actions may be challenged in a court of law and warned that, if by-laws do not please and satisfy, they should be changed — never broken.

The meeting adjourned at 1:03 p.m.

ROBERT N. NYE, *Secretary* pro tempore

APPENDIX NO. 1

ATTENDANCE

BARNSTABLE
M. E. Champion
D. E. Higgins
C. H. Keene
W. D. Kinney
O. S. Simpson

BERKSHIRE
J. J. Boland
I. S. F. Dodd
H. J. Downey
C. F. Fasce
P. J. Sullivan

BRISTOL NORTH
W. H. Allen
J. H. Brewster
J. L. Murphy
J. A. Reese
W. H. Swift

BRISTOL SOUTH
G. W. Blood
R. B. Butler
E. F. Cody
J. A. Fournier
H. E. Perry
H. P. Sawyer
I. N. Tilden
C. C. Tripp

ESSEX NORTH
E. S. Bagnall
R. V. Baketel
C. W. Bullard
L. R. Chaput
E. H. Ganley
H. R. Kurth
P. J. Look
R. C. Norris
G. L. Richardson
A. F. Shea
F. W. Snow
T. N. Stone
C. F. Warren

ESSEX SOUTH
Bernard Appel
H. A. Boyle
C. P. Brown
C. L. Curtis
R. E. Foss
S. E. Golden
Loring Grimes
P. P. Johnson
J. F. Jordan
B. B. Mansfield
A. E. Parkhurst
O. S. Pettingill
W. G. Phippen
E. D. Reynolds
J. R. Shaughnessy
J. W. Trask
C. F. Twomey
C. A. Worthen

FRANKLIN
F. J. Barnard
H. L. Craft
A. H. Ellis
W. J. Pelletier
H. G. Stetson
A. H. Wright

HAMPDEN
E. P. Bagg
W. C. Barnes
J. M. Birnie
W. A. R. Chapin
J. L. Chereskin
G. B. Corcoran
E. C. Dubois
P. E. Gear
Frederic Hagler
E. A. Knowlton
M. W. Pearson
A. G. Rice
G. L. Schadt
G. L. Steele

HAMPSHIRE
A. J. Bonneville
W. J. Collins

MIDDLESEX EAST
J. H. Blaisdell
Richard Dutton
E. M. Halligan
J. H. Kerrigan
K. L. Maclachlan
G. R. Murphy
R. W. Sheehy
R. R. Stratton
J. M. Wilcox

MIDDLESEX NORTH
M. L. Alling
H. R. Coburn
W. M. Collins
R. L. Drapeau
A. R. Gardner
W. F. Ryan
W. H. Sherman
M. A. Tighe

MIDDLESEX SOUTH
E. W. Barron
W. B. Bartlett
Harris Bass
S. M. Biddle
E. H. Bigelow
G. F. H. Bowers
R. N. Brown
R. W. Buck
E. J. Butler
B. F. Conley
D. F. Cummings
C. H. Dalton
H. F. Day
C. L. Derick
J. E. Dodd
J. G. Downing
A. W. Dudley
C. W. Finnerty
F. W. Gay
H. G. Giddings
H. W. Godfrey
B. I. Goldberg
A. D. Guthrie
A. M. Jackson
E. L. Kattwinkel
A. A. Levi
F. P. Lowry
A. N. Makechnie
J. C. Merriam
Dudley Merrill
C. E. Mongan
J. P. Nelligan
E. J. O'Brien, Jr.
Dwight O'Hara
Max Ritvo
E. H. Robbins
E. S. A. Robinson
W. D. Roche
E. F. Ryan
M. J. Schlesinger
W. N. Secord
J. W. Sever
E. F. Sewall
E. W. Small
H. P. Stevens
H. W. Thayer
J. H. Townsend
J. E. Vance
R. H. Wells
Hovhannes Zovickian

NORFOLK
J. R. Barry
Carl Bearse
M. I. Berman
William Dameshek
F. P. Denny
H. M. Emmons
J. C. V. Fisher
Susannah Friedman
David Glunts
B. T. Guild
D. L. Halbersleben
J. B. Hall
R. J. Heffernan
Morris Ingall
H. J. Inglis
I. R. Jankelson
C. J. Kickham
C. J. E. Kickham
E. L. Kickham
D. L. Lionberger
D. S. Luce

C. M. Lydon
T. F. P. Lyons
F. P. McCarthy
F. J. Moran
M. W. O'Connell
H. C. Petterson
Frederick Reis
S. A. Robins
S. M. Saltz
D. D. Scannell
J. A. Seth
J. W. Spellman
J. P. Treanor, Jr.
W. J. Walton
N. A. Welch

NORFOLK SOUTH

C. S. Adams
H. H. A. Blyth
R. L. Cook
F. W. Crawford
W. G. Curtis
D. B. Reardon
H. A. Robinson
W. L. Sargent

PLYMOUTH

J. E. Brady
Charles Hammond
W. T. Hanson
P. B. Kelly
P. H. Leavitt
C. D. McCann
G. A. Moore
D. W. Pope
W. H. Pulsifer

SUFFOLK

H. L. Albright
A. W. Allen
W. B. Breed
W. E. Browne
C. S. Butler
G. C. Caner
E. M. Chapman
David Cheever
M. H. Clifford
Pasquale Costanza
R. L. DeNormandie
G. B. Fenwick
Reginald Fitz
Channing Frothingham
M. N. Fulton
Joseph Garland
A. A. Hornor
Rudolph Jacoby
H. A. Kelly
T. H. Lanman
R. I. Lee
C. C. Lund
H. C. Marble
G. R. Minot
W. J. Mixter
J. P. Monks
Donald Munro
H. L. Musgrave
R. N. Nye
F. R. Ober
J. P. O'Hare
L. E. Parkins
L. E. Phaneuf
Helen S. Pittman
R. M. Smith
Augustus Thorndike, Jr.
E. F. Timmins
Conrad Wesselhoeft
C. F. Wilinsky

WORCESTER

J. C. Austin
W. P. Bowers
L. R. Bragg
P. H. Cook
G. A. Dix
E. B. Emerson
J. M. Fallon
L. M. Felton
E. L. Hunt
E. R. Leib
W. F. Lynch
A. W. Marsh
J. C. McCann
J. W. O'Connor
R. S. Perkins
W. C. Seelye
C. A. Sparrow
G. C. Tully
R. J. Ward
F. H. Washburn
R. P. Watkins

WORCESTER NORTH

E. A. Adams
H. C. Arey
H. D. Bone
J. J. Curley
C. B. Gay
J. C. Hales
B. P. Sweeney

APPENDIX NO. 2

REPORT OF THE COMMITTEE ON MEMBERSHIP

The committee recommends:

1. That the following named four fellows be allowed to retire under the provisions of Chapter I, Section 5, of the by-laws:

Bright, James C., Fall River
Knowlton, Charles D., Rockport
Libby, Mildred A., Worcester
Vickery, Lucia F., Jamaica Plain

2. That the following named two fellows be recommended for affiliate fellowship in the American Medical Association:

Gray, Hugh B., Potter Place, New Hampshire
Knowlton, Charles D., Rockport

3. That the following named two fellows be allowed to resign under the provisions of Chapter I, Section 7, of the by-laws:

Brown, Henry S., Takoma Park, Maryland
Bryan, William A., Norwich, Connecticut

4. That the following named two fellows be allowed to resign under the provisions of Chapter VII, Section 4, of the by-laws:

Goldberg, Maurice, Amesbury
Litvich, Michael, Revere

5. That the following named fellow be allowed to change his membership from one district society to another without change of legal residence, under the provisions of Chapter III, Section 3, of the by-laws:

From Norfolk to Suffolk

Stevens, William B., Brookline

G. COLKET CANER, *Chairman*

APPENDIX NO. 3

REPORT OF THE COMMITTEE ON ETHICS AND DISCIPLINE

During the year the Committee on Ethics and Discipline has held five regular meetings and one special meeting, over which the president of the Society presided. Reports have been made to the Council of all but the last regular meeting.

Since the last meeting of the Council, the committee has answered many requests for information and advice and has called the attention of several fellows to unethical publicity on their part.

One fellow made rather extravagant statements regarding his hospital in a radio broadcast during a health week sponsored by a local organization. The fellow's attention was called to the fact that his address did not conform to the general principles governing publicity as proposed by the Committee on Ethics and Discipline and accepted by the Council on February 2, 1938.

The committee appreciates the fact that there may be many radio talks by fellows of which it hears nothing. When criticism of a radio address is made, the committee is often asked why it does not criticize all fellows who speak on the radio. The answer, of course, is clear. The committee cannot sit by the radio day by day. Only when such addresses are called to its attention can it take up the matter with individual fellows. The committee does, however, urge all fellows to become familiar with the general principles governing publicity that the Council accepted three years ago. If these suggestions were conscientiously followed, the Committee on Ethics and Discipline would have little or no criticism to make regarding publicity.

During the year the committee has asked for the resignation of three fellows. One has already been acted on. Two resignations have been received since the last meeting of the Council, one because of participation in the procuring of an abortion and the second because of deceit in the case of an automobile accident. In the latter case the fellow asked for a hearing before the Committee on Membership and the Committee on Ethics and

Discipline. This hearing was given, following which it was the unanimous opinion of the combined committee that the fellow be asked to resign. The report on these two fellows has already been presented to you by the Committee on Membership.

ROBERT L. DENORMANDIE, *Chairman*

APPENDIX NO. 4

REPORT OF THE COMMITTEE ON MEDICAL EDUCATION AND MEDICAL DIPLOMAS

The Committee on Medical Education and Medical Diplomas during the past year has devoted its efforts chiefly to drawing up changes in the by-laws relative to the admission to the Society of the graduates of foreign medical schools and unrecognized domestic medical schools. The number of foreign graduates applying for admission to the Society during the last twelve months has been 92. Of these 64, or 69 per cent, have been approved by this committee for examination by the censors, and 59 have been admitted as fellows of the Society. During this same time the number of graduates of unrecognized domestic medical schools applying has been 80. Of these 27, or 33 per cent, have been approved by this committee for examination by the censors, and 23 have been admitted as fellows of the Society. Therefore, 21 per cent of all admissions to the Society were graduates of foreign schools, 8 per cent were graduates of unrecognized domestic schools, while 71 per cent were graduates of approved schools.

There is every indication that soon the number of applicants from foreign schools will decrease, while the number of applicants from unapproved domestic schools will show no such decrease. This committee in approving applicants intends to continue to follow the policy enunciated in its last report, which was approved by the Council at its recent special meeting.

Two regular meetings were held before the November and the May examinations, and one special meeting to consider the case of an applicant about whom the committee had received widely divergent reports.

JOHN P. MONKS, *Chairman*

APPENDIX NO. 5

REPORT OF THE COMMITTEE ON PUBLIC HEALTH AND THE SUBCOMMITTEE ON PUBLIC EDUCATION

The weekly broadcasts over WAAB, the "Green Lights to Health," were carried on from November to April, a somewhat shorter period than in recent years. The committee has no means of knowing how large an audience it had or how much it accomplished in the matter of health education.

The president of the Society referred to the committee a letter he received from Dr. Edgar C. Yerbury, secretary of the Committee on Mental Health for Defense, a joint undertaking of the Massachusetts Department of Mental Health and the Massachusetts Society for Mental Hygiene. They requested that the Massachusetts Medical Society join with other organizations in sponsoring this movement and appoint a representative to work with them. The committee voted approval of this plan and requested the President to nominate a representative from the Society.

A letter from Dr. Donald B. Armstrong, third vice-president of the Metropolitan Life Insurance Company, was referred to the committee. The company is launching this month a nationwide educational campaign on diabetes and wants the members of this society to be informed of their plans. The field agents of the company will contact individual physicians and supply them with diet and identification cards and other printed matter. Suitable leaflets will also be distributed to the public. It is believed that this material will help both physicians and patients.

At the meeting of the Council on February 5, 1941, a letter from Dr. Herbert Margolis, of the Oral Hygiene Council of Massachusetts, was read and referred to the Committee on Public Health. In brief, this letter, which was printed in the proceedings of the Council (*New Eng. J. Med.* **224**:380, 1941) stated that whereas children are not marked "absent," "tardy" or "excused" when they attend dental or hospital clinics during school hours, they are so marked when they have an appointment at a dentist's or physician's office. This would seem to penalize children whose parents finance such work.

The Oral Hygiene Council was planning to urge the Boston School Committee to amend its regulations "so that it would excuse a child for medical and dental service, which of course covers private medical and dental service as well as clinic and hospital service." If this change were adopted by the Boston School Committee, it was hoped that other communities could be induced to follow its example. The support of the Massachusetts Medical Society in bringing this about was asked for.

Dr. Patrick J. Foley, of the Oral Hygiene Council, met with the Committee on Public Health. In the discussion it was apparent that some members of the committee felt very strongly that the schools were over-emphasizing the importance of a perfect school attendance, with the result that children were attending school when really ill, to the detriment of their own health as well as to others through the spread of communicable disease. The committee voted to recommend to the Council that the Massachusetts Medical Society join with the Oral Hygiene Council in requesting the Boston School Committee to make this change in its regulations; hence the following motion is recommended:

> That the Massachusetts Medical Society join with the Oral Hygiene Council of Massachusetts in requesting the Boston School Committee to amend its rules and regulations so that a child may be excused for medical and dental service without being considered an absentee.

FRANCIS P. DENNY, *Chairman*

APPENDIX NO. 6

REPORT OF COMMITTEE ON MEDICAL DEFENSE

It is with regret that we report the recent death of our committeeman, Dr. F. B. Sweet, of Springfield. He was one of the members of the original Committee on Medical Defense and faithfully served continuously until his death.

During the past year only one additional member of the Massachusetts Medical Society has requested legal aid in a malpractice suit. In this case, the defendant is insured and is seeking the added support of our attorneys.

One case was satisfactorily disposed of during the year. Another case was tried before a jury in December, 1940, and a verdict was directed for the defendant. The plaintiff is, however, taking the case to the Supreme Judicial

Court, so that it cannot, as yet, be considered closed. An additional case appears to be inactive and will probably not be pursued farther. A total of eight cases are pending at this time.

During the year, an attempt was made to circumvent the two-year statute of limitations, which is based on the date of the alleged malpractice. In this case, the suit was brought by the executor of an estate within two years of his appointment but after the time limit of the alleged malpractice. It is of some importance that this exception was not allowed by the courts.

The committee is well pleased with the management of malpractice suits by our legal advisers.

A. W. ALLEN, *Chairman*
E. D. GARDNER
W. R. MORRISON
HORATIO ROGERS, *Secretary*

APPENDIX NO. 7

REPORT OF THE COMMITTEE OF ARRANGEMENTS

We offer the program of this meeting as our report to date. The work of the committee is still unfinished, and we shall render a final report after the annual meeting is over.

EDWARD J. O'BRIEN, JR., *Chairman*

APPENDIX NO. 8

REPORT OF THE COMMITTEE ON PUBLIC RELATIONS

The Council has already endorsed the proposal of the Blue Cross to extend its privileges to physically qualified individuals who have no opportunity to associate themselves with groups. The Committee on Public Relations has considered the form and fee for physical examination of these candidates and recommends your approval of a $3 base fee, supplemented by extra charges if special examinations are required.

The committee met with Dr. B. W. Mandelstam, medical adviser to the Department of Public Welfare of the Commonwealth of Massachusetts, and considered certain mutual problems.

In a very few communities in this state the hospitalized welfare recipient is charged a fee for physicians' services (for example $50 for a major operation and $15 for the assistant). The State cannot allow reimbursement to the town if the town pays these fees, so some cities or towns are sending these cases to hospitals in other communities where no charges for welfare care are permitted by the hospital. The Committee on Public Relations voted not to interfere now with this situation but instead asked the Special Committee for the Study of Welfare Medical Care — Drs. Bagnall, Hunt, Hornor, Duncombe and Pelletier — to endeavor to arrange a fee table for professional service to hospitalized welfare cases throughout the State and to consider the advisability of having the local committees on public relations referee all bills for medical care.

The special committee believes that the profession must come to the position of assuming a degree of responsible censorship wherever there exists an unenlightened tendency to violate principles of fair practice. Some state welfare administrators have regulated these things without first giving the local professional organization an opportunity. In this state, the Franklin District Medical Society now supervises all bills for welfare medical care. We recommend that this practice be extended to all district committees on public relations or to special committees, and that these committees be authorized by their district societies to review bills for welfare medical services and to recommend adjustments wherever indicated.

The special committee believes that this is not a strategic time to make endeavors toward procurement of a fee schedule of payments by the State to physicians on welfare cases in hospitals. The whole philosophy of charitable medical service in hospitals by staff physicians is involved. We agree that it may fairly be contended that staff physicians should be compensated for both inpatient and outpatient service, but unless the practice of over a century is to be changed, with all that it involves, evolution rather than revolution is the method of choice.

The Committee on Public Relations recommends that the Council approve the requirement that the delegate to the Committee on Public Relations of the Massachusetts Medical Society be chairman of his district committee and that he be a member of the Council.

E. S. BAGNALL, *Secretary*

APPENDIX NO. 9

REPORT OF THE COMMITTEE ON POSTGRADUATE INSTRUCTION

The postgraduate extension courses for the academic year 1940–1941 ended on April 30. In the past few years, the Society has co-operated with the Massachusetts Department of Public Health, the United States Public Health Service and the Federal Children's Bureau in providing this type of postgraduate teaching for all the physicians of the Commonwealth. The Society has appropriated $1000 to aid in organizing the work; the government agencies have paid all other expenses.

Courses were given in twenty places with enrollment as follows:

DISTRICT	PLACE	1939	1940	1941
Barnstable	Hyannis	33	23	22
Berkshire	Pittsfield	45	50	50
Bristol North	Taunton	31	20	18
Bristol South	Fall River	36	22	42
	New Bedford	34	34	42
Essex North	Lawrence	48	52	40
Essex South	Salem	54	59	54
Franklin	Greenfield	27	47	34
Hampden	Holyoke	30	40	18
	Springfield	40	100	38
Hampshire	Northampton	30	32	33
Middlesex East	Melrose	21	54	40
Middlesex North	Lowell	21	25	32
Middlesex South	Cambridge	50	80	25
Norfolk	Norwood	(no course)	26	32
Norfolk South	Quincy	25	20	25
Plymouth	Brockton	35	27	23
Suffolk	Boston	180	172	95
Worcester	Milford	20	30	30
	Worcester	(no course)	45	(no course)
Worcester North	Fitchburg	35	26	25
Totals		795	984	718

As a part of the national antivenereal disease campaign, the committee has co-operated with the government agencies in providing clinical teaching in gonorrhea and syphilis in the outpatient departments of the Boston Dispen-

sary and Massachusetts General Hospital. The teaching clinics were open to any registered physician in Massachusetts. It is hoped that these clinics will continue to be of service to those clinicians who desire to know more about the diagnosis and treatment of venereal disease.

In the autumn of 1940 a postgraduate library extension service was inaugurated; this project has been under the direct supervision of the Boston Medical Library. The references have been planned to supplement the postgraduate extension courses; so far there has not been time enough to finish all this service. Twenty bibliographies were completed; fifteen physicians requested loans of one or more sets of references. Dr. Henry R. Viets, the director, believes that this service is worth while and that it should be enlarged and completed so that physicians may have clinical references readily available. This project has been started as a public-health service and has been made possible by a grant of funds from the United States Public Health Service, on recommendation of the Massachusetts Department of Public Health.

Plans have been made for the New England Postgraduate Assembly to be given next fall on Wednesday and Thursday, October 29 and 30. The program is almost completed and will be published early in September. The list of speakers is as follows:

Dr. Frank E. Adair, New York City (gynecology)
Dr. J. Burns Amberson, New York City (tuberculosis)
Dr. J. J. Bloomfield, Washington, D. C. (industrial medicine)
Dr. William Darrach, New York City (fractures)
Dr. John S. Lockwood, Philadelphia (chemotherapy)
Dr. H. M. Marvin, New Haven (heart disease)
Dr. William S. McCann, Rochester, New York (renal diseases)
Dr. Damon B. Pfeiffer, Philadelphia (surgery)
Dr. Homer F. Swift, New York City (rheumatic fever)
Dr. George W. Thorn, Baltimore (endocrine disorders)
Dr. Norris W. Vaux, Philadelphia (obstetrics)

These plans as well as the extension program are subject to change depending on the state of the national emergency.

FRANK R. OBER, *Chairman*
LEROY E. PARKINS, *Secretary*

APPENDIX NO. 10

REPORT OF THE COMMITTEE ON INDUSTRIAL HEALTH

We are still working toward the end that all industry in the Commonwealth of Massachusetts, large and small, and all physicians directly or indirectly interested in those industries will receive special information regarding the health problems of industry.

Various methods have been used to present our case, particularly to the physicians. The *Journal* has been invaluable in presenting our cause, through the written reports of committee activities and also through published industrial medical case histories, and questions and answers about industrial medical problems.

The committee held monthly meetings throughout the fall and winter. The last meeting was on April 10 and is of particular interest because of the interesting group of invited guests. There were present an industrial executive as a representative of Associated Industries, a member of the Industrial Accident Board, a member of the Department of Labor, Division of Industrial Hygiene, two members of the Harvard School of Public Health, a member of the United States Navy and two officers of insurance companies that handle workmen's compensation insurance. These guests were invited to acquaint them with the work being done by the Massachusetts Medical Society through this committee and also to get from them the ideas of the agencies that they represent and that should be vitally interested in our program.

The committee is at present tabulating statistics on all physicians in Massachusetts who are engaged in industrial medical practice to any extent. This work is being done for the Committee on Medical Preparedness of the American Medical Association.

W. IRVING CLARK, M.D., *Chairman*
LOUIS R. DANIELS, M.D., *Secretary*

APPENDIX NO. 11

REPORT OF THE COMMITTEE ON THE ARMY MEDICAL LIBRARY AND MUSEUM

The chairman of this committee has been active in the last three months and on one occasion visited Washington and the Army Medical Library. With Surgeon General Magee, United States Army, and Colonel Jones, librarian of the Army Medical Library, various sites were inspected in Washington for the new building. A site was finally chosen on Capitol Hill and information has been received that the library will be erected there. A bill is now before Congress to purchase the land, the site having been authorized by the Planning Board of Washington. Your committee feels reasonably certain that the library will be erected on the proposed site and that building will be started within a year.

As there are likely to be matters coming up in the course of the next few years in regard to this project, it is hoped that the committee will be continued.

HENRY R. VIETS, *Chairman*
ROBERT B. OSGOOD
BENJAMIN SPECTOR

APPENDIX NO. 12

REPORT OF THE COMMITTEE TO EQUALIZE DISTRIBUTION AMONG PHYSICIANS OF MEDICAL SERVICE TO WPA EMPLOYEES

In accordance with the plan reported to the Council on February 5, a member of our committee visited the WPA office in Boston each month. A listing of the total amount of fees each physician has received for this work has been completed. This listing covers the entire time the WPA has been in operation — about three and a half years. Some physicians have received more than $3000 from the federal government during this period.

In order to start the equalization process, it is planned to remove from the list of available physicians all those who have received $500 or more for this kind of service. There would be an important exception to this ruling, agreed on by the State Compensation Officer and your committee, namely, when an injured WPA employee has a family physician, he may still be allowed to go to him for treatment. The process of equalization of fees would necessarily be slowed by this means, but the principle of free choice seems of more importance. In this connection, it is essential that every means be taken

to prevent timekeepers and foremen from influencing the injured workman in his selection. Too much of that sort of thing has occurred in the past.

Certain physicians, by reason of the type of practice they have, tend to get more WPA patients than others. This appears inevitable, and so long as the physician selected is the family physician, our committee believes that it is just. Exact equalization of fees cannot be brought about.

One doctor has been overenergetic and particularly persistent in his attempt to get more WPA work. He has written repeatedly to the State Compensation Officer, describing his successful practice, his qualifications and his equipment. He complained that he was not receiving his share of the WPA cases at that time. He further stated that his income-tax returns would prove that he had the best practice in town. A check of the records in the WPA office revealed the fact that this complaining physician had handled more than one third of all the WPA injury cases in that town, and that he had received in fees nearly 50 per cent of all the money paid to the seven physicians in that town. He went so far as to request a hearing before the State Compensation Officer, and an appointment was given to suit his convenience. One of our committee inconvenienced himself to be present, but the complainant failed to appear, nor did he bother to explain his failure to appear. Needless to say, he was notified that no further WPA cases would be referred to him until a more equitable distribution had been arrived at.

In another district, sixteen physicians were removed from the listing because the money they had received greatly exceeded that received by all other physicians.

For your information, during the three and a half years of WPA operation in Massachusetts, $1,047,401 has been spent for the care of approximately fifteen thousand injured workmen. The portion paid to physicians has not been totaled. Hospital charges are a big item.

Discussion of this report and suggestions by the Council would be welcomed by your committee.

GUY L. RICHARDSON, *Chairman*

APPENDIX NO. 13

REPORTS OF COMMITTEES APPOINTED TO CONSIDER RESTORATION TO FELLOWSHIP

Restoration to fellowship, with the usual provision regarding the payment of dues, was recommended for the following former members:

Bernard H. Appel, Brighton (Committee: Max Ritvo, David Stern and R. H. Aldrich).

Harold I. Cohen, Lynn (Committee: C. F. Twomey, Bernard Appel and C. L. Hoitt).

Frederick E. Cruff, Norwell (Committee: B. H. Peirce, R. F. Littlehale and Charles Hammond).

J. Frank Curtin, North Abington (Committee: J. H. Dunn, J. M. Peckham and Jonah Fieldman).

Leroy S. Ford, Keene, New Hampshire (Committee: S. N. Vose, H. L. Albright and W. H. Lacey).

Maurice Gerstein, Brookline (Committee: C. J. Kickham, E. L. Kickham and Albert Ehrenfried).

William R. Hill, Brookline (Committee: C. J. Kickham, J. A. Hennessey and R. J. Donovan).

Elihu I. Lewis, Boston (Committee: W. T. O'Halloran, M. D. Altschule and N. L. Fineberg).

Coval H. Liverpool, West Somerville (Committee: C. W. Finnerty, J. E. Gillis and Herbert Cholerton).

John L. O'Toole, Haverhill (Committee: W. W. Ferrin, L. R. Chaput and G. J. Connor).

Nathan Silverman, Lawrence (Committee: J. J. Deacy, J. J. Kelleher, Jr. and J. A. Levek).

Thomas V. Uniac, Lawrence (Committee: R. V. Baketel, V. A. Reed and H. F. Dearborn).

No action was recommended in regard to the petition of Anthony P. Carogana, Chelsea (Committee: W. J. Brickley, J. A. Smith and W. E. Garrey).

APPENDIX NO. 14

COMMITTEES APPOINTED TO CONSIDER PETITIONS FOR RESTORATION TO FELLOWSHIP

The following committees were appointed to consider the petitions for restoration to fellowship of the following two former members.

For Edward C. Messer, Dorchester:
W. J. Walton, D. J. McSweeney and J. J. Meehan.

For Nathan Pulsifer, Lowell:
A. R. Gardner, D. J. Ellison and H. W. Jewett.

APPENDIX NO. 15

RESOLUTION PRESENTED BY DR. MICHAEL A. TIGHE

WHEREAS, Throughout the greater part of the United States the application of medical knowledge and skill to the needs of justice is seriously impaired because medicolegal investigations of the cause and circumstances of deaths are conducted under the quasijudicial political office of county coroner; and

WHEREAS, the Commonwealth of Massachusetts, due largely to the efforts of the Massachusetts Medical Society, was the first state in the United States and for that matter the first community in the English-speaking part of the world to abolish the coroner's office and replace it by that of medical examiner; therefore, be it

RESOLVED, that the delegates of the Massachusetts Medical Society to the forthcoming meeting of the American Medical Association in Cleveland be instructed to recommend to the House of Delegates that it appoint a committee of three, to be known as the Committee on Legal Medicine, and that the aforesaid committee be instructed:

To survey the manner in which legal medicine, so far as it is concerned with the activities of the coroner's office, is being practiced in various parts of the United States;

To consult with the Medicolegal Committee of the American Bar Association to determine how best to improve the practice of legal medicine; and

To acquire and make available to the medicolegal committees of the various state medical societies such information as may be useful to them in their efforts to abolish or improve the coroner system in their respective states.

MEDICAL PROGRESS

DIAGNOSTIC ROENTGENOLOGY

The Flat Film of the Abdomen; Myelography: Air versus Iodized Oil; Fibrocystic Disease of Bone

RICHARD SCHATZKI, M.D.*

BOSTON

l. 224
941

THE FLAT FILM OF THE ABDOMEN

THE flat film has for many years played an important role in the examination of the abdominal organs. Owing to many technical improvements, the quality of such films has greatly improved in recent years, and this has simultaneously broadened the scope of the roentgenologist.

No other single x-ray film gives so much information as the flat film, which reveals not only the disseminated or generalized bone diseases, such as metastatic tumors, diffuse osteoporosis and Paget's disease, but also a vast variety of soft-tissue abnormalities. It is impossible to include them all in this review, for a casual count shows that more than a hundred conditions are at times diagnosable by these films. Hence, this report is limited to the nonskeletal parts of the abdomen, and emphasizes those conditions to the diagnostic significance of which clinicians have hitherto paid insufficient attention, as well as those subjects to which recent contributions have been made. No attempt will be made to quote the literature in detail.

A few words about the preparation of the patient are in order, since an adequate examination of the abdomen is rendered impossible by an incompletely emptied colon or a partially filled bladder. The patient should have, unless it is contraindicated, a good cathartic, preferably castor oil, as well as a cleansing enema. Pitressin may be useful in emptying the bowel. The patient should void before the films are taken.

In a review of this subject it may be worth while to remember the elementary fact that x-rays differentiate objects adjacent to each other only if the objects are of different translucency to the rays. Generally speaking, there are only four different densities to x-rays in the body. Arranged in groups, from the densest to the lightest, they are: calcified areas, including bone; all soft tissues, excluding fat, and all body fluids, excluding chyle; fat and chyle; and air and other gases. An organ becomes visible only if the adjacent tissue belongs to a group above or below its own x-ray density.

All articles in this series will be published in book form; the current volume is *Medical Progress: An annual, 1940* (Springfield, Illinois: Charles C Thomas Company, 1941. $4.00).

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The Spleen

In most flat films of the abdomen, the lower edge of the spleen, as well as parts of its lower medial border, is visible. Occasionally, the upper part of the medial border is seen within or medial to the air-filled stomach. Statistics on the exact size of the normal x-ray shadow of the spleen do not exist, to my knowledge, but in the daily clinical routine the roentgenographic determination of the size of this organ has proved reliable.

Enlargement of the spleen is usually readily seen on a flat film. This fact can be utilized clinically, particularly in cases in which the determination of the size of the spleen by percussion and palpation is rendered difficult or doubtful. The characteristic shape of the x-ray shadow of the spleen has proved useful in cases in which it was clinically doubtful whether a mass in the left upper quadrant represented the spleen. A lateral flat film may be of particular help in such a case.

The Liver

The superior surface of the liver is clearly shown by the position of the diaphragm. Its lower edge can be seen in contrast with the adjacent colon or small intestine on most flat films, thus outlining the size of this organ. Pfahler[1] described special studies on the x-ray measurements of the liver. Although an exact interpretation of liver size is made difficult by its distortion or by any unusual tilt of the organ, gross changes in its size are readily recognizable if the lower edge is visible. Marked anomalies in the shape of the liver, as produced by syphilitic lobulation or by large primary tumors, may be seen on the flat film. Superficial lobulation, produced by metastasis, is not visible.

Liver abscesses may produce no change from the normal appearance in the flat film. On the other hand, multiple abscesses may cause a generalized enlargement of the organ, and some liver abscesses may produce a localized lobulation of the diaphragm. In such cases, fluid may be found in the costophrenic angle. Gas formation in an abscess can be easily demonstrated, especially if a fluid level is shown by using some view with horizontal direction of the x-rays. Calcification occasionally occurs in old abscesses.[2]

The diagnosis of infection within the bile ducts is at times difficult clinically. It is, therefore, of interest that Berg[3] recently described 4 cases in which, owing to the action of gas-forming bacilli, a more or less extensive demonstration of the bile-duct system occurred on the flat film. More commonly, air filling of the bile ducts is produced by an abnormal postoperative or spontaneous communication of the bile ducts with the gastrointestinal tract. If the communication is spontaneous, it is in rare cases due to an eroding peptic ulcer or neoplasm, but usually it is produced by the penetration of a gallstone. Air in the bile ducts, if found in a patient with ileus, is highly suggestive of gallstone ileus, even though the obstructing stone itself cannot be demonstrated within the distended air-filled and fluid-filled loops of intestine.[4]

The Pelvic Organs

The use of the flat film in the study of pelvic disease is important, but not generally appreciated. Whereas at times the flat film may merely reveal the presence of some abnormality of the pelvic organs, at other times a definite diagnosis can be made. To state whether a pathologic soft-tissue mass is malignant or benign, or inflammatory, or indeed, to name its true origin, may at times be extremely difficult. Nevertheless, the value of the film is manifest by the esteem that experts in manual examination have for it. Needless to say, a particularly well-cleansed rectum and sigmoid and an empty bladder are necessary for a successful visualization of these organs. Films with varying tilts of the x-ray tube may prove helpful.

On a good film the normal uterus is usually visible as an ovoid shadow caused by the projection of the anteflexed organ. Fibroids produce uterine enlargement, usually eccentric; in later years they are commonly calcified. Large intramural fibroids may produce a symmetrical enlargement of the uterus, simulating pregnancy and differing only in the absence of fetal bones. Similarly, it may be difficult or at times impossible to differentiate large ovarian cysts from such fibroids. To diagnose carcinoma of the uterus is not possible, but the flat film may give helpful information of the extent of parametrial involvement in advanced cases.

Inflammation within the parametrial tissues often produces a localized disappearance of the uterine outline. In acute or subacute processes, the pelvic subperitoneal fat layer, which is normally clearly visible on flat films, becomes edematous in the inflammatory area, and hence invisible. Abscesses can be seen as a more or less diffuse density filling the pelvic cavity, and at times may have an appearance that is difficult to distinguish from that of tumor.

Normal ovaries are occasionally seen on flat films. Ovarian cysts produce localized, round, soft-tissue shadows, the size of which shows great variation. Even small cysts may be seen on flat films, and not infrequently such cysts have proved to be palpable only at a second manual examination, after their presence had been suggested by the x-ray film.

Other ovarian tumors may produce shadows of varying size and shape, and some of them are definitely diagnosable by the flat film. Dermoids not infrequently contain incompletely developed teeth or bones. A correct differentiation from teratomas may be impossible; however, a diagnosis of dermoid may be possible even in the absence of calcified masses.[5-7] This is because dermoids contain sebaceous material, which is more translucent than the capsule, thus producing the x-ray appearance of a "radiolucent tumor."

Cystadenoma and cystadenocarcinoma of the ovary are often identifiable by the presence of small calcified psammoma bodies, large enough to be visible on flat films. These areas of calcification may betray the presence of ovarian tumors at a preclinical stage[8]; in tumors of long standing the calcifications may become very diffuse, filling large portions of the abdominal cavity. On the other hand, even large cystadenomas may exist without visible areas of calcification.

Inflammatory and neoplastic soft-tissue masses arising in the bony pelvis are usually easy to recognize.

This description of the possibilities of the flat-film examination of the pelvis should not produce an exaggerated impression of its practical value. The presence of many of the processes mentioned certainly cannot be excluded if they are not visible on the film, nor is a roentgenologic differential diagnosis possible in many cases in which disease is visible.

The Retroperitoneal Organs

The normal retroperitoneal space offers a fairly characteristic appearance on the flat film, an appearance created by the fat that surrounds the kidneys and the retroperitoneal muscles (psoas and lumbosacral muscles). As previously noted, fat is of a different density to x-rays than other soft tissues, and for this reason these organs are made visible on the flat film by the fatty tissue surrounding them. Thus, the retroperitoneal organs of an obese person are better visualized than those of a thin person. Any localized disappearance of the retroperitoneal outlines suggests disease in this area, whereas a generalized loss of outline occurs in the presence of extensive disease within the abdomen, such as massive ascites or a large ovarian

tumor. Here again, the adequate preparation of the patient is of paramount importance, since air or fecal material may seriously obscure the retroperitoneal structures.

A localized space-consuming process in the retroperitoneal tissue, whether tumor, abscess or hematoma, produces a homogeneous soft-tissue shadow obscuring the normal retroperitoneal outlines. The differential diagnosis between the three conditions may at times be impossible, but usually the position of the mass and the sharpness and shape of its edge, as well as the presence and structure of calcification within or around it, permit a fairly accurate diagnosis.

Gas in the retroperitoneal spaces may be due to gas-producing bacilli, or more rarely to retroperitoneal perforation of the duodenum or colon. The development of fat necrosis presents a peculiar mottled appearance.

The Pancreas

Although the normal pancreas is not visible on the flat film, Engel and Lysholm[9] have estimated its approximate size by measuring on a lateral film the distance between the air-distended stomach and the spine. This distance they found increased in cases of pancreatic enlargement. Case,[10] who recently reviewed the roentgenology of pancreatic disease, recommends the method.

Pancreatic cysts, with their characteristic round shape, are usually readily visible on a flat film. Occasionally large pancreatic carcinomas can be seen on flat films, but the roentgenologist must be content to diagnose a retroperitoneal tumor, perhaps venturing a guess at its pancreatic origin based on its location and its effect on the position of the kidneys.

On the whole, the flat-film examination of the pancreas is still unsatisfactory.

The Kidneys

The kidneys are seen on most good flat films because of the fatty tissue surrounding them. Although normal kidneys vary greatly in size, pathologic variations in size are usually recognizable, such as small shrunken or large polycystic kidneys. Tumors and solitary cysts produce a localized enlargement of the kidney, and are usually impossible to differentiate on the flat film. If a tumor or cyst protrudes only slightly from the kidney surface, it may simulate a congenital lobulation of the kidney, an anomaly of no significance.

Renal stones are the commonest cause of calcification within the kidney outline; a detailed discussion of stones is beyond the confines of this report. Linear areas of calcification in a characteristic arrangement within the pyramids of the kidneys represent calcium casts of the tubules, and are highly suggestive of the greatly increased calcium excretion found in hyperparathyroidism.[11] Calcifications in tuberculous abscesses of the kidneys are usually very characteristic, whereas the occasional calcifications in tumors are of less diagnostic significance.

The importance of the flat film in the diagnosis of perinephritic abscess has been emphasized for years. The most characteristic change is that of a localized disappearance of retroperitoneal structures (kidney shadow and psoas shadow). Scoliosis, elevation of the diaphragm and displacement of the kidney shadows are other signs found in this condition. Hemorrhage around the kidney may simulate the picture of perinephritic abscess; the changes, however, are usually more extensive. In cases of subcapsular hemorrhage, the involved kidney may remain clearly visible, with its shadow greatly enlarged.

The Adrenal Glands

Normal adrenal glands are not seen on the flat film. Tumors become visible only after they have reached large dimensions. In Addison's disease, the adrenal glands may be calcified, and I know of cases of previously unsuspected Addison's disease that were diagnosed first by the characteristic x-ray appearance of the calcified glands. On the other hand, such calcification does not necessarily establish the diagnosis of Addison's disease, because it is sometimes seen in the absence of adrenal insufficiency.

The Peritoneal Cavity

The value of the flat film for demonstrating air in the peritoneal cavity is well known. This examination is widely used whenever there is a question of a perforated viscus. The absence of demonstrable air does not, however, exclude the presence of such a perforation.

Large amounts of fluid in the abdomen are usually easier to ascertain clinically than by the use of the flat film. This film may, however, be of great assistance in differentiating large ovarian cysts and ascites. The characteristic displacement of air-filled bowel by the ovarian cyst usually permits a prompt diagnosis.

Diffuse peritonitis usually produces early paralytic ileus. In this condition, fluid may be seen to separate the dilated air-filled intestinal loops.

Localized intraperitoneal abscesses become visible if they contain gas. If they are large enough, they produce a homogeneous soft-tissue shadow, which may be visible as such, for example, in the region of the appendix or in the pelvis. Laurell[12]

has shown how essential it is to watch for a disappearance of the normally visible subperitoneal fat layer in all those cases in which the abscess is close to the abdominal wall.

The Stomach

The air-filled and fluid-filled stomach is often seen on the flat abdominal film, a fact that must be known only to avoid misinterpretation. Cancer of the fundus may be visible on the flat film if the tumor deforms the gas bubble of the stomach, particularly on a film taken in the upright position. Recently a rare case of extensive calcification in a scirrhous carcinoma involving the greater part of the stomach has been reported.[13] Usually, however, the flat film is of little or no help in the diagnosis of cancer of the stomach.

The Intestines

One of the most important functions of the flat abdominal film is the assistance it offers in the diagnosis of mechanical and paralytic ileus. The characteristic dilatation of air-filled and fluid-filled loops of small and large intestine becomes visible within six hours after the onset of the pathologic process.[14] The roentgenographic appearance of ileus has been described in many excellent papers,[15, 16] and it will not be further discussed here. The value of the flat film in these cases cannot be overestimated, but it should be emphasized that in most cases the differential diagnosis between mechanical and paralytic ileus is not possible.

The advantage of flat-film examination in cases of intussusception and volvulus has been stressed in recent papers.[17, 18] A definite diagnosis of these conditions can often be made by this method.

Tumors of the small intestine commonly assume large dimensions and become visible on flat films. They often contain large irregular gas-filled cavities with a characteristic appearance.[19]

Miscellaneous

This report has not mentioned a large number of conditions in which the flat film may be helpful. Among them are gallstones, hydrops of the gall bladder, pancreatic stones, calcified mesenteric lymph nodes, kidney, ureteral and bladder stones, parasites (echinococcal cysts and cysticercosis), pregnancy, pneumatosis cystoides intestinalis, tuberculosis of the seminal vesicles, tuberculous or osteomyelitic paravertebral abscesses, mesenteric cysts, abdominal neuroblastomas and calcification and aneurysm of the abdominal aorta or its branches.

These conditions are referred to by name only because a complete discussion is impossible, not because the flat film is considered to be of less importance in these conditions. As a matter of fact, in some of these abnormalities the study of the flat film has become a specialty within the specialty of roentgenology, for example, in the study of the appearances of early and late pregnancy.

To summarize the value of the flat film in one sentence, one may say that it allows a definite diagnosis to be made in a fair number of conditions, but that in an even greater number it focuses the attention of the examiner on a certain region of the abdomen and indicates in which direction further examination should go.

Myelography: Air versus Iodized Oil

Progress in the x-ray examination of lesions of the spinal canal in the last two decades is intimately connected with the introduction of iodized oil (lipiodol) as a contrast substance. Small tumors that are not seen in simple roentgenograms become visible as defects in the column of oil; progress in the recognition of even smaller lesions, such as ruptured intervertebral disks, has recently been reviewed.[20]

The introduction of iodized oil into the lumbar canal has, however, met with opposition ever since it was first recommended. The literature of the last fifteen years is filled with controversial evidence proving or disproving the harmfulness of the injected oil. This controversy has lately been reviewed.[21]

In recent years, the use of air or oxygen has been recommended as a substitute for iodized oil in the examination of the spinal canal. Chamberlain and Young[22] have shown the method to be effective in demonstrating encroaching lesions, and their report has stimulated similar studies in other clinics. The special value of the method lies in the fact that the gases are rapidly absorbed, leaving no residue in the canal. The results of such studies have shown uniformly that a positive finding in an air myelogram is of diagnostic importance,[23] although not quite so reliable as a defect demonstrated by lipiodol.[24] A normal air myelogram was, however, found to be of very little significance, inasmuch as succeeding lipiodol injections often revealed pathologic processes. It therefore became necessary in cases in which the air myelogram had been negative to do a second examination with oil, and in these cases it was found that the second test was rendered less effective by the previous air injection.

The main drawback of iodized oil has been the fact that it remains indefinitely in the subarachnoid space after injection. This has always been the target of attack of those who condemn the use of oil, and it has produced some uneasiness in those who have continued using it. It has always been striking to me to see how freely the oil moves in

the subarachnoid space even many years after its injection, a finding that argues against any markedly irritating quality of the substance. Garland and Morrissey[25] recently re-examined 25 patients several months or years after the injection of 2 to 5 cc. of lipiodol, finding not only that the oil was still present in all cases, but that in two thirds it was discovered in the cerebral cavity. In spite of this, neurologic examinations showed that in none of the cases were there symptoms or signs that had not been present prior to the injection or could be attributed to the presence of the oil. It is interesting to note that undesirable effects have been particularly unusual in those clinics in which lipiodol has been used extensively. Hence, although gases are readily absorbed after air myelograms, the diagnostic value of the examination has been markedly limited. On the other hand, the use of lipiodol has given good results, but the oil has remained in the spinal canal indefinitely, unless removed at a subsequent operation. In search of an ideal contrast substance, Thorotrast has been tried, but reports about its practical usefulness are still wanting.

An unexpectedly simple solution of the problem has been described in a recent paper by Kubik and Hampton.[26] These authors have outlined a method that makes it possible to remove lipiodol from the spinal canal through an 18-gauge needle, after the examination has been completed. The patient is placed horizontally, face down, on a fluoroscopic table. A lumbar-puncture needle is introduced into the third lumbar space, with the patient still in the prone position. The oil is injected and the needle left in place during the fluoroscopic examination, which follows immediately. At the end of the roentgenologic examination, the oil is brought into the region of the needle tip by tilting the table and is withdrawn by gentle suction with a small syringe. By tilting the table, under fluoroscopic control, any remaining oil is brought to the point of the needle and removed. Since small droplets of oil may not be visualized with the fluoroscope, a film is taken before the needle is withdrawn, to make sure that removal of the oil has been as complete as possible.

This simple procedure has proved successful in the hands of the authors in over 50 cases. Some experience and strict adherence to a few rules mentioned by them make for successful removal of injected lipiodol. In principle, this method has disposed of the main objection to the use of iodized oil. It is obvious that lipiodol examinations of the spinal canal should not be performed unless definitely indicated, but there is reason to believe that an oil examination, if performed as described above, is no more dangerous than a lumbar puncture.

Fibrocystic Disease of Bone

The diagnosis and classification of fibrocystic lesions of the bones has been, and still is to some extent, a rather difficult enterprise.

A bone cyst should be a well-defined bag containing fluid, if one uses the word "cyst" as in other parts of the body. Only a few bone lesions that clinically and roentgenographically are called "cysts" fulfill this strict definition. Many of these contain blood clots or living tissue, with or without the fluid mentioned above.

Roentgenographically it is impossible to see any difference between the density or structure of a fluid-filled bone cyst and that of a cyst containing fibrous or other soft-tissue masses. It seems necessary to recognize this difficulty, although it appears of questionable value to confine the use of the word "cyst" to the strict definition given above.

The classification of these bone lesions, at first purely on a descriptive basis, led to a great deal of confusion, because of the numerous syndromes named and because the etiology of such lesions remained unknown. With the advent of accurate etiologic information in only a few of these conditions, the number of bone-cyst syndromes has been markedly diminished, and the confusion considerably cleared.

The most revealing discovery was the establishment of an etiologic relation between several types of bone cysts and hyperfunctioning states of the parathyroid glands. Ever since von Recklinghausen described cases of osteitis fibrosa cystica generalisata, with multiple cystlike areas scattered throughout the skeleton, this peculiar condition has puzzled roentgenologists, anatomists and clinicians. These areas may be in the medullary part of the bone, but more commonly are in the cortex. Histologically they represent either giant-cell tumors or cysts. They may be single, but are oftener multiple. In addition to these lesions there usually is severe generalized decalcification of the whole skeleton. This combination of cystlike areas and decalcification produces a characteristic x-ray appearance.[27, 28] Blood chemical studies show the well-known disturbance of calcium metabolism, with a high serum calcium, a low serum phosphorus and a high serum phosphatase.

The relation of this disease to hyperfunction of the parathyroid glands was postulated many years ago, but not until Mandl cured a patient with osteitis fibrosa cystica generalisata by removal of a parathyroid tumor was this proved. The clinical entity has since been worked out in many excellent papers.[29]

The successful explanation of osteitis fibrosa cystica generalisata prompted further attempts at explaining other cystic bone lesions as being due to a hyperfunction of the parathyroid glands or other endocrine organs. All these attempts have failed. Although a definite etiology has not been found for other bone cysts, another syndrome connected with fibrocystic bone disease has been established in recent years.

In 1937, Albright and his associates[30] described a syndrome in which cystlike areas in various bones play an important role. The syndrome consisted of multiple bone lesions with a marked tendency to be unilateral and with the histologic picture of osteitis fibrosa, round, nonelevated pigmented areas on the skin, which tended to be on the same side as the bone lesions, and endocrine dysfunction, which in females was associated with precocious puberty.

Albright and his associates deserve credit for emphasizing the combination of the abnormalities mentioned above as representing a characteristic and not too uncommon entity, although lesions similar to those considered by them had been described, mainly in case reports, in previous years under various names (localized osteitis fibrosa, focal osteitis fibrosa, osteodystrophia fibrosa unilateralis and so forth).

The bone lesions are of interest and importance. In most cases several bones are involved, the distribution of the disease being spotty and the uninvolved bones appearing normal. The lesions have a tendency to be regional and are consequently often unilateral, although not necessarily so. The bones in the involved areas are either slightly or markedly increased in size, with cystlike areas of rarefaction varying in size and shape and involving both cortex and medulla, in long as well as in flat bones. The epiphyses often escape involvement. Precocious bone age and early union of the epiphyses are part of the syndrome. The skull is commonly involved, particularly the frontal and occipital bones. Usually the cystlike areas fade out gradually, whereas others are well defined. The involved bone may be increased but is more commonly decreased in density, with a characteristic absence of trabeculae in a large portion of the bone. The bone looks as if one had made a sketch of the trabeculae with a pencil and had then rubbed out the trabeculae with the finger, leaving the smudge. The description of the lesion is more difficult than the actual appearance warrants. Once seen, they are fairly easily recognized. There is no generalized decalcification, and the uninvolved bone appears normal, in contradistinction to the lesions of hyperparathyroidism. For this reason the bone lesions are said to be disseminated, not generalized.

Blood chemical studies show the serum calcium and phosphorus to be within normal limits. Urine calcium is not elevated, as in hyperparathyroidism. Cases with very advanced bone changes may have an elevated serum-phosphatase level.

Anatomically there are no fluid-filled cysts, but a tough fibrous tissue is found. An excellent colored picture of a skull lesion, exposed during operation, has been recently published.[31] Histologically, osteitis fibrosa is present. Osteoclasts, however, are infrequent in comparison to the findings in hyperparathyroidism.

The etiology of the syndrome is unknown, and this fact has caused Albright and his associates to refrain from naming the disease; others have recently called it "polyostotic fibrous dysplasia."[32] It does not appear to be a primary endocrinopathy. Albright has suggested the presence of an early, possibly a congenital, neurologic anomaly.

The roentgenologist plays an important role in the recognition of these cases, inasmuch as the majority of them are first seen by him, following a pathologic fracture of one of the involved bones. Unless he is acquainted with the syndrome, a series of unnecessary and dangerous procedures may follow. The lesions may be treated as bone tumors, and mutilating operations have been performed. The similarity of some of the described areas to those of hyperparathyroidism has occasioned exploration of the parathyroid glands, obviously with a negative result.

The classification of fibrocystic disease in bones has been greatly clarified by the recognition of two distinct groups: osteitis fibrosa cystica generalisata, due to hyperparathyroidism, and osteitis fibrosa cystica disseminata, as part of Albright's syndrome.

Although the etiology of the latter condition is not known, its general characteristics put it in a group similar to neurofibromatosis. There still remain single bone cysts and giant-cell tumors, the etiology and even the classification of which have not been settled, in spite of many explanatory theories.

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CASE RECORDS OF THE MASSACHUSETTS GENERAL HOSPITAL

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICOPATHOLOGICAL EXERCISES

FOUNDED BY RICHARD C. CABOT

TRACY B. MALLORY, M.D., *Editor*

CASE 27261

PRESENTATION OF CASE

A thirty-seven-year-old Italian barber was admitted to the hospital complaining of weakness, fever and shortness of breath of three months' duration. Seventeen years before, at the age of twenty, the patient had a penile sore and was given a single intravenous injection. He had no further symptoms until five years before admission, when shooting pains developed in his legs. Diagnoses of neurosyphilis, syphilitic aortitis and aortic regurgitation were made, and treatment consisting of intramuscular bismuth, mercury and iodides was instituted. Spinal-fluid Wassermann and blood Hinton reactions were said to have been positive at this time. The patient continued to have occasional lightning and girdle pains, and these recurred with more severity in the three months prior to admission. At this time he developed "flu," with a nonproductive cough and loss in weight, appetite and strength. For six weeks he had noticed showers of painless red spots over his lower extremities, all of which had disappeared at the time of admission. Bouts of fever, spiking to 102°F., occurred in the afternoon and evening; they were accompanied by sweating, without chills. In addition he had noted increased nocturnal breathlessness, amounting to orthopnea, and, for two weeks, swelling of his ankles and fleeting joint pains in his knees, ankles and elbows.

The family history was negative. The patient had had scarlet fever and perhaps measles in childhood, and at the age of fifteen was told by his physician to stay in bed for six months. The patient's wife and nine-year-old child were well and gave no serologic evidence of syphilis.

Examination showed a thin, poorly nourished, pale, acutely ill man with no petechiae or clubbing of the fingers. The right pupil was large and fixed, and the left miotic and fixed to light but not to accommodation. The fundi were not remarkable. There was no venous distention, but the arterial pulsations were forceful. The apex impulse was maximal in the sixth left interspace just beyond the anterior axillary line, 11.5 cm. to the left of the midline and 3.5 cm. to the left of the midclavicular line. In the third interspace dullness extended 7 cm. to the left of the midline. The right border of dullness was 4 cm. from the midline. Rhythm was regular at a rate of 90 to 110. The first sound was replaced by a harsh systolic murmur heard all over the precordium but maximal in the second and third left interspaces, where a faint, short, early diastolic blow was also audible. A systolic thrill was palpable in the third and fourth left interspaces, and faintly over the supraclavicular vessels. A "pistol-shot" was heard over the brachial artery. One observer heard no second heart sound, but another recorded the aortic second sound as present and equal to the pulmonic. The blood pressure in the right arm was 150 systolic, 50 diastolic, and in the left, 125 systolic, 60 diastolic. The liver and spleen were enlarged to percussion but not palpable (the patient would not co-operate on abdominal examination). Rectal examination was negative. The deep reflexes were equal and active, and the vibration and position senses were intact. In the Out Patient Department three weeks before admission, purpuric spots had been noticed over the patient's legs.

The temperature was 100°F., the pulse 90, and the respirations 22.

The urine was acid, with the specific gravity ranging from 1.004 to 1.015; there was a ++ test for albumin, and the sediment contained two or three red blood cells, five or six white blood cells and occasional granular casts per high-power field. The stools were normal. The blood showed a red-cell count of 4,000,000 with a hemoglobin of 8 gm. (photoelectric-cell technic), and a white-cell count of 7000 to 12,000; a smear showed microcytosis, anisocytosis, poikilocytosis and hypochromia. The corrected sedimentation rate was 1.1 mm. per minute. Two blood cultures showed no growth. The van den Bergh was normal, the nonprotein nitrogen 56 mg., the serum protein 6.9 gm. per 100 cc., and the carbon dioxide combining power 18.4 milliequiv. per liter. The blood Hinton and Wassermann reactions were positive, as was the spinal-fluid Wassermann reaction. The spinal-fluid protein was 26 mg. per 100 cc.; there were two lymphocytes per cubic millimeter, and the gold-sol curve was 5555331100.

An x-ray film of the chest showed marked enlargement of the left ventricle; the lung fields were clear. On fluoroscopy, the aorta showed water-hammer pulsations.

An electrocardiogram in the Out Patient Department showed no abnormal axis deviation or rhythm but a prominent S_1. A second tracing suggested digitalis effect, with a bizarre QRS_4.

The patient was very sick, ran an irregular temperature from 100 to 103°F. and was troubled

by severe epistaxes and recurrent hiccoughs. Small amounts of sulfathiazole were given, and the blood level reached 2 to 4 mg. per 100 cc. The bladder became enormously distended; foot and ankle edema persisted, and he was given digitalis and sodium citrate, the latter to correct the mild acidosis. Blood chemical studies showed continuing acidosis, with a calcium of 7.6 mg., a phosphorus of 1.9 mg. and a phosphatase of 2.2 Bodansky units per 100 cc. The plasma vitamin C was 1.1 mg. per 100 cc. A protein fractionation showed 1.7 gm. of albumin and 6.0 gm. of globulin per 100 cc.

While on sulfathiazole the patient's temperature fell to normal and remained so for three days after the omission of the drug. Nevertheless he steadily failed and died suddenly on the nineteenth hospital day.

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Differential Diagnosis

Dr. Howard B. Sprague: In this case it seems as if we should have to start out with a diagnosis at the beginning and try to defend it. I think the story of the immediate illness is quite characteristic of subacute bacterial endocarditis, with what was called "flu," cough, loss of strength, showers of "red spots," fever, chills, sweating, beginning congestive failure, joint pains, two or three red cells in the urinary sediment, anemia and increased sedimentation rate; but we have not the confirmatory evidence of a positive blood culture. It does not seem as if this were the major cause of the cardiac findings. In other words this did not start de novo and cause the various murmurs in the heart. There was some other underlying cardiac lesion.

Of course it would be easy to take the diagnoses that had been made a year before, when he came in and was treated for syphilis. Aortic regurgitation was found at that time, and the diagnosis of syphilitic aortitis was made. The combination of syphilitic aortitis and aortic regurgitation complicated by bacterial endocarditis is very rare, although it does occur. On looking through the literature I found there had been only 5 cases reported up to 1938; 5 more were reported that year. I was rather struck with the fact that, at least in these cases, the picture was one of a free aortic regurgitation or else there was no aortic regurgitation but a bacterial invasion of the aorta above the aortic valve, sometimes with perforation. I do not know what the figures show in this hospital, but I can recall very few cases that I have seen personally in which syphilis was the underlying lesion for a *Streptococcus viridans* infection. That in itself perhaps draws me somewhat away from a diagnosis of a syphilitic lesion of the aortic valve.

By far the commonest lesion is rheumatic, and one can distort the evidence to his own purposes in building up the diagnosis of a rheumatic lesion of the aortic valve. The patient had scarlet fever in childhood, and this must be considered as evidence of some sort of streptococcal infection. We believe nowadays that, if a person has rheumatic heart disease following scarlet fever, he had rheumatic fever at the time he had the scarlet fever. This patient was told to go to bed for six months when he was fifteen years old. I do not know just why a doctor might tell a fifteen-year-old boy to go to bed for six months, but I should think it might have been the finding of something wrong with his heart. There is the suggestion that he had rheumatic infection.

On physical examination he had a harsh systolic murmur replacing the first sound, maximal in the second and third spaces, but they noted only a faint diastolic blowing murmur. Although I get the impression that this man had rather marked arterial pulsations, the description of the cardiac findings is not that of the characteristic loud to-and-fro aortic regurgitation of syphilis. There was a systolic thrill felt in the third and fourth interspaces and in the supraclavicular vessels. That is, of course, suggestive evidence of some degree of obstruction of the aortic valve. It could be due either to a chronic rheumatic involvement with some interadherence of the cusps or to complicating bacterial vegetations. We can use the description of the aortic second sound here any way we want to. For my "rheumatic" purposes it was absent.

The laboratory studies, particularly the x-ray films and electrocardiogram, showed a big left ventricle; nothing is said about the auricles, which I presume were not demonstrably enlarged. The lung fields were clear, and there were said to be water-hammer pulsations in the aorta. The electrocardiogram makes me suspicious of a pure aortic lesion. There was a normal electrical axis. Again I am not sure, and I commend it to our staff perhaps to look up, whether or not we have had any cases of free aortic regurgitation due to syphilis in which we did not have evidence of left-axis deviation by electrocardiogram, unless it was complicated by something else. If one is supporting a rheumatic story, one would suggest that there also was a mitral lesion to give a compensating right-ventricular effect on the electrocardiogram. Another thing that is somewhat against this being a primary syphilitic process is that the diagnosis was made five years before

entry, and he proceeded to live along about as usual, I should say, until he acquired some sort of infection. He did not go rapidly downhill the way so many patients with syphilitic aortitis do when the aortic valve and the regions of the coronary ostia are involved, and he lived longer than the average patient with syphilitic aortitis after the diagnosis of the valve lesion.

I suppose I should wonder whether he had a congenital heart. The likely types would be interventricular septal defect or patent ductus arteriosus. A patent ductus arteriosus might cause some of the peripheral signs of aortic regurgitation, but an interventricular septal defect would not, nor is the description of the murmurs at all suggestive of patent ductus arteriosus. I think I have to make a diagnosis of an underlying rheumatic heart, with aortic regurgitation and some degree of stenosis. Whether the stenotic element was of a rheumatic nature or due to bacterial vegetations, I do not know. I am also going to guess that Dr. Mallory found some involvement of the mitral valve, with mitral regurgitation, and that there was a superimposed subacute bacterial endocarditis, at least on the aortic valve.

I am left with the question what to say about syphilis in this case. It appears that the patient had syphilis, including infection of the central nervous system, but I can only guess that, on the law of probability, there were syphilitic lesions in the aorta; so I might as well put it in for good measure. He died suddenly with a combination of congestive failure and some other factor that might have been embolic. There is nothing on which I can make a diagnosis of the terminal event.

Parenthetically, I should like to make one short note about "water-hammer pulsations." In deference to the members of the X-ray Department, whom I respect very much, the term "water hammer" refers to something you can palpate, not something you can see. Corrigan, when he described water-hammer pulse, was familiar with a scientific instrument called the water hammer. When I ask physicians what this is, they usually say it is the noise in steam-radiator pipes, or has something to do with a hydraulic ram. In reality, a water hammer is an instrument that has been used by teachers of physics for many years, to illustrate the falling of liquids in a vacuum. The water rises and falls in a mass and gives a sensation of shock to the palpating hand and an audible blow as it strikes the bottom of the tube.

DR. JAMES R. LINGLEY: The films showed marked enlargement of the heart, as described, the enlargement being almost entirely left ventricular. In this oblique view one sees no auricular enlargement. The aorta is certainly not dilated. In fact, it appears to be rather small. The lungs are clear. There is no evidence of coarctation. I think the x-ray appearance bears out Dr. Sprague's diagnosis of an aortic-valve lesion, more likely rheumatic than syphilitic. It would certainly be unusual to have a small aorta in syphilitic aortitis.

DR. PAUL D. WHITE: Have you any comment to make about the blood-pressure difference in the arms?

DR. SPRAGUE: I thought that was more than we ordinarily see, but I cannot find enough in the aorta by x-ray or physical examination to explain it.

DR. WYMAN RICHARDSON: There was a great deal of disagreement about this case. Dr. Dieuaide and Dr. Bland are here, and they can express their opinions later. We all agreed that he had bacterial endocarditis. I thought the patient had rheumatic heart disease by somewhat the same, but not so good, reasoning as that of Dr. Sprague. Several things interested us. One was the manner of death; another was the urinary situation. The patient appeared to be uremic, and whether that was due to stasis or to nephritis associated with bacterial endocarditis I was not sure. The anemia was unusual and looked more like hereditary Mediterranean anemia than that due to an infection. I hesitated to speak of that because so many other things were running through this case. The albumin-globulin ratio was rather curious and caused a good deal of comment, but we still did not, I think, lay a great deal of stress on it. It suggests the possibility of liver disease.

DR. FRANCIS R. DIEUAIDE: I should like to differ mildly with a portion of Dr. Sprague's analysis, in that I think this thing he calls a rarity, that is, bacterial endocarditis in association with syphilitic disease of the aorta, depends entirely on how much we see of the latter disease. There were three series of cases reported last year,[1-3] and I know from my own experience that one sees much more of it in localities where there is a good deal more syphilis than there is here. I should not like to call the combination rare. Secondly, one has to be careful about putting too much weight on the x-ray appearance of the aorta, because we have had the experience of finding even aneurysms of the first portion of the aorta when the rest of the aorta is not involved. It is no great rarity for syphilitic aortitis to be very patchy, and sometimes the ring of the aorta is extensively de-

stroyed without spread of the involvement upward. So although I agree in general with Dr. Sprague's reasoning about the case, I think the argument for syphilitic aortitis with involvement of the valve ring is a fairly good one. Also I do not believe that the course of syphilitic aortitis, even with involvement of the ring or valve to the point that the peripheral signs of regurgitation occur, is necessarily so short. In the past we have not seen these patients very often until they had symptoms of failure. Now in the large clinics for the treatment of syphilis, where patients are brought in willy-nilly because of positive serologic tests, frequently with no symptoms whatever, we are seeing more patients in whom the early diagnosis of regurgitation can be made. I agree that the course is very short, once important signs of cardiac insufficiency appear, but I think we know very little about the preceding course, which probably runs for a fairly long period of time in a great many cases.

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Dr. Edward F. Bland: There is not much to say except there was one physical sign that disturbed us a good deal: the thrill was much more impressive than one might suspect from reading the description here. It was well marked and clearly localized in the third and fourth left interspaces near the sternum and could not be felt at the base of the heart. The vibrations over the vessels at the base of the neck were hardly more than one might expect with this degree of widening of the pulse pressure. At first glance several of us considered very seriously the possibility of some congenital lesion but hesitated to bring it into this already complicated picture. Dr. Reno Porter, when he saw the patient in the Out Patient Department prior to admission to the ward, first suggested an interventricular septal defect complicating an extensive involvement of the aortic valve. We considered the further possibility of a complicating patency of the ductus arteriosus, but absence of a prominence of the pulmonary conus, among other findings, forced us to discard this diagnosis. We continued to watch for pulmonary infarcts as supporting evidence of either a patent interventricular septum or ductus, but none were recognized. At the end I think the weight of opinion was that this was predominantly an obstructive lesion at the aortic valve, probably rheumatic in origin, with superimposed bacterial endocarditis.

Dr. Earle M. Chapman: Why could it not have been pulmonary stenosis rather than aortic?

Dr. Bland: There was nothing clearly to suggest it,—no evidence of right-axis deviation in the electrocardiogram and no cyanosis,—and all the peripheral signs pointed to deformity of the aortic valve.

Clinical Diagnoses

Central-nervous-system syphilis.
Aortic regurgitation, ? type.
Subacute bacterial endocarditis.
Nephritis, ? type.
Syphilis of liver?

Dr. Sprague's Diagnoses

Rheumatic heart disease, with aortic regurgitation and stenosis (and probably mitral regurgitation).
Subacute bacterial endocarditis.
Syphilitic aortitis.

Anatomical Diagnoses

Congenital heart disease: interventricular septal defect, ? bicuspid aortic valve.
Probable rheumatic heart disease, with aortic stenosis.
Subacute bacterial endocarditis: aortic valve and septal defect.
Syphilitic aortitis.
Septic infarction of the lungs.
Chronic passive congestion.
Tabes dorsalis.

Pathological Discussion

Dr. Tracy B. Mallory: There was an obvious bacterial endocarditis, but the real question, of course, concerns the substratum on which it had developed. The aorta showed patchy scarring, which was grossly and microscopically quite characteristic of syphilis. It stopped abruptly, however, several millimeters above the commissures and coronary ostia. The aortic cusps instead of being separated were fused with dense fibrous tissue. At one commissure this fusion was so complete as to be suggestive of a congenital bicuspid valve. The other commissure looked more like an old rheumatic lesion, and was so diagnosed despite the fact that the mitral valve was negative. Overlying the chronic changes were fresh vegetations characteristic of bacterial endocarditis. When the heart was first examined we were surprised by the fact that the right ventricle was very much hypertrophied, proportionately quite as much or more than the left, a finding that accounts, of course, for the lack of axis deviation. Not until the valve leaflets were reflected did we discover a small interventricular septal defect, with bacterial vegetations clustered about the mouth in each ventricle. We did find two small septic infarcts in the lungs but no major pulmonary embolus. This patient unquestionably had syphilis of the

aorta and congenital heart disease, certainly a septal defect and perhaps a bicuspid aortic valve, which was probably the chief basis of the bacterial endocarditis; there was a questionable, old rheumatic involvement of the aortic valve.

DR. SPRAGUE: The only happiness I can get out of this is that the patient did not have evidence of left-axis deviation in the electrocardiogram: the complication of right-heart strain explains the normal axis in the presence of aortic-valve disease.

DR. EUGENE SULLIVAN: What did the kidneys and liver show?

DR. MALLORY: Both were very large and very congested. The liver showed a marked degree of central necrosis, but no more than the livers of many chronic cardiac patients who do not have any lowering of the serum albumin. The kidneys showed a mild degree of embolic nephritis. It did not seem enough in itself to produce renal insufficiency, but perhaps coupled with the severe passive congestion it might have been.

DR. DIEUAIDE: Was the mitral valve entirely normal?

DR. MALLORY: It measured 12 cm. in circumference, which is unusually large. We could see no evidence of rheumatic involvement, but I think there probably was some degree of relative regurgitation with a valve as big as that.

DR. BENJAMIN CASTLEMAN: I should like to ask Dr. Lingley if the small aorta was not an important clue.

DR. LINGLEY: I think that should have made us more suspicious of congenital heart disease. I am also surprised that, with such a small aorta, he had a syphilitic lesion.

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CASE 27262

PRESENTATION OF CASE

A seventeen-year-old girl entered the hospital complaining of epigastric pain. Five days before admission the patient complained of anorexia and general malaise, which were followed in a few hours by a dull epigastric pain. Sal Hepatica gave no relief and that evening the pain became sharp and precluded sleep, although she found that it was eased by doubling up. The next morning the patient fainted while getting out of bed, and so the family physician was called. He advised immediate hospitalization, but because the patient felt better as the day progressed, his advice was not taken. The next day the epigastric discomfort was much worse; the physician told the family that he could feel a mass in the patient's stomach and again urged hospitalization. The pain continued unabated and that night after taking a drink of hot water she vomited twice.

Although the patient felt feverish, no chills had occurred, nor had there been pain on urination or defecation, jaundice or melena. Menstruation had always been regular, and the attack of pain had begun one day before the cessation of her period.

The past and family histories were irrelevant.

On examination the patient was pale, appeared ill but was in no acute distress. The heart and lungs were negative, the blood pressure 160 systolic, 60 diastolic. In the abdomen a very tender, tense to hard mass was palpable, which filled the entire epigastrium. No bruit could be heard, no edge felt, nor were masses palpable in the flanks. Rectal examination was negative.

The temperature was 102°F., the pulse 140, and the respirations 24.

The urine showed a + test for albumin. The blood showed a red-cell count of 2,500,000 with a hemoglobin of 80 per cent, and a white-cell count of 24,000 with 90 per cent polymorphonuclears. The nonprotein nitrogen of the serum was 16 mg. and the protein 5.6 gm. per 100 cc., and the chlorides 103.1 milliequiv. per liter.

An x-ray film of the chest, with the patient in the upright position, showed no evidence of disease; there was no subdiaphragmatic air or fluid level in the abdomen. Flat films of the abdomen showed a round, rather smooth, homogeneous mass filling the midportion of the upper abdomen. The stomach was outlined by air and appeared to be displaced to the left and somewhat compressed; its antrum was not seen. The transverse colon also appeared slightly displaced downward. The iliopsoas shadows were distinctly seen; the kidney shadows were only faintly and questionably outlined. There were no signs of intestinal obstruction, and no abnormal calcification. A lateral film of the abdomen showed the stomach to be flattened. Fluoroscopy with only a small swallow of barium showed the stomach as previously described—displaced to the left and slightly anteriorly, but mainly flattened out against the left lateral abdominal wall; no intrinsic lesion could be seen. The barium sank to the lower portion of the stomach with some difficulty. The mass seen on the plain films could be definitely palpated, was markedly tender and extrinsic to the stomach. The passage of the barium into the duodenum could not be observed, since the patient was in acute distress.

The day after admission an operation was performed.

Differential Diagnosis

Dr. Horatio Rogers: May we see the x-ray films?

Dr. Aubrey O. Hampton: On the plain film you can see the gas in the stomach, which is markedly displaced to the left. There appears to be an increase in soft-tissue density in the mid-epigastrium. The psoas muscles are distinct. The left kidney appears normal, and although the upper part of the right kidney is not seen, its lower pole appears normal. The barium in the stomach shows the findings as described — marked displacement to the left; I cannot see much displacement anteriorly, but this was a very thin patient and the stomach could not have moved very far forward. There is no calcification in the region of the mass, and the duodenum, although not filled with barium in this film, is not dilated, as demonstrated by gas filling. The spine appears normal.

Dr. Rogers: Could freshly collected blood give that degree of radiopacity?

Dr. Hampton: Yes; but since the shadow is very sharp in outline, the hemorrhage would have to be in some sort of sac.

Dr. Rogers: Although the record does not specifically say so, I assume that this girl was well up to the onset of the present attack. We must therefore try to think of something that produced a large tender epigastric mass and made the girl very sick within the short period of five days. That the mass was in the abdomen and not in the abdominal wall is demonstrated by x-ray. Furthermore, we know that the mass was round, smooth and tense, and must have originated in the posterior part of the upper abdomen, since it displaced the stomach forward and to the left and displaced the transverse colon downward. Our only guide to the nature of the mass is furnished by the symptoms, signs and laboratory data, that we must presume it caused. It must have been either inflammatory, anatomic, neoplastic or cystic.

Inflammation is suggested by the temperature of 102°F., the white-cell count of 24,000 and the 90 per cent polymorphonuclears. The only way I can imagine how a large inflammatory mass could suddenly appear is by the perforation of the contents of a hollow viscus into the lesser peritoneal cavity when the foramen of Winslow was blocked. There are a number of objections to this, but one is enough to rule it out: the mass would not be rounded by x-ray.

Anatomically, the mass might be an enormously dilated gall bladder, an enlarged horseshoe kidney, an enlarged spleen, possibly with a twisted pedicle, or a herniation of small bowel into the lesser peritoneal cavity with infarction. Gangrene or infarction is suggested by the tenderness, fever and leukocytosis. This mass is in the wrong place for a gall bladder; there is no reason for a midline kidney to become gangrenous; a spleen would displace the stomach medially; and an internal strangulated hernia would give signs of obstruction, which this patient did not have.

A variety of solid neoplasms could occur in this location and could even be round and smooth, but any of them would have taken a long time to reach this size, and would certainly have been discovered before producing a sudden attack.

The description is so much more suggestive of a cystic tumor that I believe we are safe in concluding that that is what it was. To account for the acute symptoms we must further assume a twisted pedicle with infarction or sudden hemorrhage into the cyst. Ovarian cysts are the commonest and are prone to twist, but the x-ray description makes this impossible by placing it behind the stomach and above the transverse colon. Cysts of the liver and spleen are possibilities but are not prone to sudden hemorrhages or twisted pedicles. Echinococcal cysts may occur anywhere, but they would have to rupture to produce acute symptoms, and there were no signs of peritonitis in this case. Nor is there any mention of eosinophilia or a positive complement-fixation test. Large cysts occur in the omentum and mesentery, but not suddenly, and they are usually discovered because of their mobility or closeness to the anterior abdominal wall. Rare retroperitoneal cysts are described as arising from rests of the müllerian ducts. I have no way of ruling this rarity out, but will do so because I believe it leaves the acute symptoms unexplained.

Cystic tumors of the pancreas are not common, but they are less rare than some of the conditions already mentioned. Their most frequent location is in or slightly to the left of the midline in the upper abdomen, where they push forward between the stomach and the transverse colon. They are prone to sudden enlargement due to hemorrhage into the cyst, which may be severe enough to cause collapse of the patient. This can take place into a small silent cyst or even, according to some authorities, beneath the capsule of a pancreas which contains no cyst. Such an episode would be accompanied or followed by epigastric pain, possibly radiating to the back, by symptoms referable to distortion of the stomach, such as vomiting, by symptoms referable to acute hemorrhage, such as fainting, weakness and slight fever, and by blood changes, such as transient ane-

mia, leukocytosis and lowered serum protein. Furthermore, pancreatic cysts occur more frequently in women than in men, and the maximum incidence is between twenty and forty years of age. I shall refrain from speculating on the particular type of pancreatic cyst this one is — whether a cystic adenoma, a hemangioma or a simple retention cyst — and limit myself to the statement that the surgeon found a large pancreatic cyst filled with blood.

DR. GRANTLEY W. TAYLOR: Dr. Rogers has said that a pancreatic cyst traditionally presents between the colon and stomach. Quite obviously this stomach is pushed down, and the cyst is above the stomach. I think that pancreatic cysts very frequently occupy the position that this one does and that they do not usually or commonly present below.

DR. ROGERS: Whipple* states that, although some go down into the pelvis and some present above the stomach, the majority are between the stomach and colon. He had 133 cases, in which more than half the cysts were exactly in the midline, with about 40 per cent slightly to the left and only 10 per cent slightly to the right; they occurred at varying levels, but almost all were in the upper abdomen.

DR. JOHN D. STEWART: I should like to ask Dr. Rogers if he has any difficulty explaining the fever and leukocytosis on the basis of the diagnosis he has made.

DR. ROGERS: Those are the only things that stick in my throat, and I am assuming that the presence of the hemorrhage is responsible for them. Of course you cannot tell without any past history whether the patient might not have had some other coexisting condition that would account for anemia, leukocytosis and, possibly, fever. She was in the last day of her menstrual period, of course, but I am hoping that sudden severe hemorrhage into the cyst would account for all the blood findings.

DR. TRACY B. MALLORY: Acute external hemorrhage severe enough to produce a red-cell count of 2,500,000 will account for a considerable leukocytosis.

DR. STEWART: And give a temperature of 102°F.?

DR. MALLORY: If it were external it would not elevate the temperature.

Another point, the hemoglobin of 80 per cent is manifestly impossible, but it must have been relatively high in comparison to the red-cell count, a finding that suggests a very acute hemorrhage.

DR. EDWIN L. CANTLON: This patient came into the Emergency Ward at night, and although we did not think of the myriad of things Dr. Rogers has mentioned, we came to the same conclusion that he did and operated on her a couple of hours after admission. We found exactly what Dr. Rogers has described — a large cyst of the pancreas, which was presenting through the gastrohepatic ligament. The thing that was a bit hard to explain was the fact that the peritoneal cavity was full of fresh blood, a condition that we did not suspect from clinical examination. The blood was coming out of the foramen of Winslow, and a finger introduced into the foramen very quickly confirmed the impression that the mass was in the pancreas. By separating the gastrohepatic ligament it was easily removed. The bleeding points in the pancreas were readily stopped with atraumatic sutures.

CLINICAL DIAGNOSIS

Hemorrhage into cyst of pancreas.

DR. ROGERS'S DIAGNOSIS

Hemorrhagic cyst of pancreas.

ANATOMICAL DIAGNOSIS

Papillary adenocystoma of the pancreas, with hemorrhage.

PATHOLOGICAL DISCUSSION

DR. MALLORY: The cyst that Dr. Cantlon resected was lined with epithelium and showed numerous papillary processes, being essentially similar to the cyst in the case that was presented about a month ago. It did not appear to be very rapidly growing, but experience leads one to believe that epithelial cysts containing many papillary processes, whatever their origin, are potentially malignant. I am not willing to give an unqualifiedly good prognosis for this patient. The cyst was markedly distended with fairly fresh blood clot.

DR. ROGERS: Do you think the cyst had been there for a long time, undiscovered?

DR. MALLORY: I should certainly think it must have been present for months at least. Probably it was fairly small until it was distended by the hemorrhage.

*Whipple, A. O. Surgery of the pancreas. In *Nelson New Loose-Leaf Surgery*. Vol. V. Chap. VIII. Pp. 397-488. New York: Thomas Nelson & Sons, 1937. P. 433.

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A STATE HOSPITAL FOR THE CARE OF PSYCHOTIC CHILDREN

The desirability of establishing a hospital for the care of mentally ill children has long been in the minds of many physicians in Massachusetts. At present, there is no such provision. Not many children, to be sure, break down mentally compared with the vast number of adults who apply yearly for care. In 1939, for example, only one hundred children under fifteen years of age were admitted to state hospitals for mental diseases in Massachusetts. About ten of them had epilepsy and were adequately cared for at the Monson State Hospital. The ninety had to find whatever accommodations they could in the other state institutions.

These one hundred children, however, do not belong in buildings designed and serviced for adults. They should be cared for in separate buildings, or at least in isolated wards, with special nurses and psychiatrists, who are interested particularly in the behavior disorders of childhood. This has long been recognized by other states such as New York, where three hospitals have special provisions for juveniles. An even better example is the endowed Bradley Home at East Providence, Rhode Island, a pioneer hospital for children's behavior disorders, where a great deal of valuable work has been done in the last few years to elucidate some of the problems connected with the psychotic child. A similar institution was established some years ago in Philadelphia, particularly dealing with those children showing behavior disorders after encephalitis lethargica.

A movement for a special hospital in Massachusetts is backed by the Massachusetts Department of Mental Health and also by the Massachusetts Society for Mental Hygiene. In the publication of the latter organization for January, 1941, facts will be found summarizing the situation. The Department of Mental Health has for many years requested funds to establish a children's unit on the grounds of the Metropolitan State Hospital at Waltham. The legislature of Massachusetts has never acted favorably on this suggestion, but it is hoped that when the facts and the opinions are clearly presented and better known, this important matter will not long be delayed.

THE MICROFILM SERVICE OF THE ARMY MEDICAL LIBRARY

The Army Medical Library, in Washington, has recently inaugurated Medicofilm Service for the benefit of physicians throughout the country, a microfilm being a strip of 35-mm. motion-picture film with images of printed pages photographed on it in sequence. By this method, any article in any one of the 4034 current medical periodicals taken by the library can be obtained in microfilm copies at a very reasonable price. The charge is 30

cents for each complete article not exceeding thirty pages in length, and 10 cents for each succeeding ten pages or fraction thereof. Thus, an article can be obtained quickly for reading on a microfilm projector. This is particularly valuable for articles appearing in obscure and rare journals. Many of the small medical libraries do not take more than 200 or 300 current periodicals. The large libraries, such as the Boston Medical Library, take 800 or 900, but even this is small when compared with those taken at the Army Medical Library. The films may be projected and read with a small hand projector; however, in most libraries, large machines are available, which throw the pages on a screen two or three feet in size.

How does one find out about an article that is not likely to come to one's attention? To supplement the microfilm service, the Army Medical Library has added another of great importance to the medical profession. A weekly bulletin, *Current List of Medical Literature*, is published. Divided into large subjects, the literature of the week, as received in the Army Medical Library, is listed by the titles of articles occurring in medical periodicals. Thus, by watching one of the forty-four general classifications, a physician interested in keeping current with a special subject can quickly pick up references to that topic in any published periodical received by the library. The lists cover practically all the printed medical matter in the world. In many cases, of course, the periodical may be at hand in his own office or in his own medical library. In cases where this is not so, the Army Medical Library offers a solution for quickly bringing him the article in question. For the research worker, this brings medical literature to his desk almost immediately, three to six months before he could find it in an index, such as the *Quarterly Cumulative Index Medicus*.

Both these services are run by the Friends of the Army Medical Library. The library co-operated by providing the necessary space for the work, and by supplying the publications from which the microfilm copies are made. The only cost to the user is for actual labor and material required in making and distributing the microfilm copies. For the *Current List of Medical Literature*, a charge of $5.00 a year is made, which it is hoped will cover the cost of issuing this weekly bulletin. It should be pointed out, moreover, that occasionally, in addition to the current list of periodicals, a list of books received in a period of a month or six weeks at the Army Medical Library is also given to subscribers without additional charge.

Thus the Army Medical Library, the largest and most efficient in the world, becomes a national medical library, serving the medical profession throughout the land. To many, such a course has long been a cherished ideal. With a new building in sight for the library and with an expanding service, the medical profession should be appreciative of the fact that the Army Medical Library is alive to the present needs of the profession.

MEDICAL EPONYM

Hunterian Chancre

On page 218 of the volume, *A Treatise on the Venereal Disease* (London, 1786) by John Hunter (1728–1793), the following description appears:

> This, like most other inflammations which terminate in ulcers, begins first with an itching in the part; if it is the glans that is inflamed, generally a small pimple appears full of matter, without much hardness, or seeming inflammation, and with very little tumefaction, the glans not being so readily tumefied from inflammation as many parts are, especially the prepuce; nor are the chancres attended with so much pain or inconvenience, as those on the prepuce; but if upon the fraenum, and more especially the prepuce, an inflammation more considerable than the former soon follows. . . . The itching is gradually changed to pain; the surface of the prepuce is in some cases excoriated, and afterwards ulcerates; in others a small pimple, or abscess, appears as on the glans, which forms an ulcer. A thickening of the part comes on, which at first, and while of the true venereal kind, is very circumscribed, not diffusing itself gradually and imperceptibly into the surrounding parts, but terminating rather abruptly. Its base is hard, and the edges a little prominent. When it begins on the fraenum, or near it, that part is very commonly wholly destroyed, or a hole is often ulcerated through it.

R. W. B.

MASSACHUSETTS MEDICAL SOCIETY

SECTION OF OBSTETRICS AND GYNECOLOGY*

RAYMOND S. TITUS, M.D., *Secretary*
330 Dartmouth Street
Boston

TOXIC SEPARATION OF THE PLACENTA, WITH DEATH

A thirty-five-year-old para IV, when about thirty-seven weeks pregnant, was sent into the hospital because of a large trace of albumin in the urine and a blood pressure of 170 systolic. She remained there two days and was sent home apparently improved. She was not seen again until three weeks later, when she came into the hospital in active labor; there was profuse vaginal hemorrhage, and the patient was unable to see.

There was no history of scarlet fever. The three previous pregnancies were not described in the record; all three children were living and well. The prenatal care had been inadequate.

Physical examination at the time of the second admission was essentially negative. The heart was not enlarged; there were no murmurs. The pelvic measurements were normal. Although the blood pressure was not recorded, it was probably high, since the urine showed a large trace of albumin. The uterus was enlarged to the size of a full-term pregnancy; the patient was in labor. No fetal heart could be heard. Vaginal examination showed the cervix to be dilated to admit four fingers; no placenta was felt, and the patient was bleeding profusely. A diagnosis of separation of the placenta at term was made. Dilatation of the cervix was completed under ether anesthesia and a version was accomplished. The placenta came away with the stillborn baby. The uterus was packed with gauze, and intravenous glucose was given. The patient was typed for transfusion but died before it could be started.

Comment. This is a typical case of toxic separation of the placenta. This patient should never have been discharged from the hospital after only two days of treatment. It is possible that, had she been examined at the time of the first admission, the cervix might have been found to be favorable for elective induction by rupture of the membranes. If this had been possible, the subsequent fatal result probably would not have developed. If the patient had been treated more conservatively at the time of the second admission, — that is, by rupturing the membranes, using small amounts of pituitary extract, and giving a transfusion, — it is probable that normal delivery could have been effected without the shock attendant on dilatation of the cervix and internal podalic version; with such a degree of dilatation it is unlikely that a cervical pack and Spanish windlass would have been necessary. She was a very sick patient when she arrived in the hospital, and it is only barely possible that more conservative handling would have prevented the fatality.

*A series of selected case histories by members of the section will be published weekly. Comments and questions by subscribers are solicited and will be discussed by members of the section.

DEATHS

ANDREWS — HAROLD ANDREWS, M.D., of Boston, died June 9. He was in his sixty-ninth year.

Dr. Andrews received his degree from the Harvard Medical School in 1896. He was a fellow of the Massachusetts Medical Society and the American Medical Association, and was a member of the New England Obstetrical and Gynecological Society and the American College of Surgeons.

NORTON — GEORGE P. NORTON, M.D., of Fitchburg, died June 12. He was in his sixty-eighth year.

Dr. Norton received his degree from the Bellevue Hospital Medical College in 1895 and was on the staff of the Burbank Hospital, Fitchburg, for twenty-nine years. A former city physician and district medical examiner, he was, at the time of his death, chief medical examiner for the draft board under the Selective Service Act.

He was a member of the Massachusetts Medical Society, having been a president of the Worcester North District Medical Society, and was a member of the American Medical Association.

His widow, two sons, a daughter and a grandchild survive him.

CORRESPONDENCE

ILLUMINATION AND EYE HEALTH

To the Editor: For more than a quarter of a century our laboratory has been engaged in research aimed to provide a scientific foundation for the utilization of light and lighting as essential partners of vision and as controllable aids to seeing. With adequate facilities and without restrictions in scientific endeavor, characteristic of the research laboratories of the General Electric Company, the personnel devoted to this work has created a formidable structure, properly termed the "science of seeing." This term is used in order to distinguish it from the narrower science of physiologic optics which the more extended science includes. These researches have been conducted over a broad front and have contributed much toward easier seeing through a better understanding of the efficacy of light and lighting and other aids to seeing which influence the efficiency, comfort and welfare of human beings.

In the March 13 issue of the *New England Journal of Medicine*, Dr. David G. Cogan, not without dogmatism, naïvete and some sarcasm, apparently attempts to discredit the entire scientific structure which the researches of our laboratory have built. The absence of scientific spirit and method in his critique is further emphasized by implications that our motives are questionable. It should be obvious to those acquainted with the variety and number of researches in seeing prosecuted in our

laboratory that our work cannot be adequately discussed in a four-page paper such as that of Dr. Cogan. Neither can it be adequately discussed if the critic is inadequately familiar with it.

Statistics pertaining to the prevalence of defective vision are appalling and they should appeal to the interest of any profession or group which is in a position to lighten the visual burdens in our modern world in which critical tasks have been greatly multiplied in number and in duration. Such statistics should be particularly appealing to ophthalmologists, but Dr. Cogan seems to be more concerned with attempting to prove that poor lighting does not harm the eyes and that better lighting than has prevailed is unnecessary. In this respect his attitude is quite opposed to that of many distinguished members of his profession. (Lancaster, W. B. Ocular symptoms of faulty illumination. *Am. J. Ophth.* **15**: 783–788, 1932. Jackson, E. Light for ocular health and efficiency. *Am. J. Ophth.* **18**:374, 1935.)

Ignoring the sarcasm in his statement that the public has been subjected to a "research offensive" and that we have "inundated" various journals with technical papers bringing to the attention of professions and public the results of our researches, we admit feelings of gratitude and satisfaction for having had the opportunity to work so long in a field so important in modern civilization. The opportunity is still large, and it has always been open to others.

It is difficult and perhaps impossible to prove that poor illumination, combined with prolonged and critical seeing of near-vision tasks, directly harms the eyes. Certainly such conditions could not possibly be favorable to the eyes. However, the inability to obtain direct evidence is not uncommon in many sciences which deal with the welfare of human beings, such as the science of medicine. Much evidence must be indirect, and in the case of eyes, if one fairly views all the indirect evidence, he can hardly avoid the decision to utilize every controllable aid to seeing, whether it is type-size, light, eyeglasses, lighting or vitamins, to help reduce the severity of modern seeing. If Dr. Cogan will review the literature dealing with the foregoing aids to seeing, we are sure he will find that other professions are confronted with difficulties in supplying rigid and incontestable proofs of many accepted practices and principles.

Admittedly, we obtained much encouragement in deciding many years ago to devote a substantial part of our laboratory facilities to these researches, by broadly considering the evolution of human eyes and human beings under outdoor environmental factors, such as brightness-levels, quality of daylight and character of natural lighting. Nature is an inspiring textbook in the absence of knowledge, but we have never entertained the belief that philosophy per se proves anything. Nevertheless, theories are necessary in scientific work as temporary lines of communication between the known and the unknown; and they are also of value in encouraging researchers to invade this or that unknown. Beginning with such a view, we naturally explored the realm of physiologic optics and found that light (or more properly brightness) had been seldom considered or adequately utilized as a controlled variable and that lighting was almost entirely ignored. This left gaps in that field which it was necessary to fill. We filled some of these by giving light its proper place as an aid to seeing.

One result of our researches was to reveal that the criterion of visual acuity (as measured by the usual high-contrast objects) is not all-important. The ophthalmologist uses this function effectively to determine refractive errors, and as a consequence he naturally thinks largely in terms of threshold-size. In many tasks the criterion of visual acuity is relatively inappropriate, as, for example, in tasks involving low contrasts. Nevertheless, it is interesting to note in this connection that Dr. Cogan states that visual acuity reaches a maximum at about 10 foot-candles. This is not true, even for black objects on white backgrounds, as has been known since the time of Koenig. Actually in such cases, visual acuity is still increasing after an illumination of 100 foot-candles has been reached. However, here it is well to emphasize that *illumination* and *brightness* are two different factors; and if a black test-object is viewed, not on a white background which diffusely reflects 80 per cent of the incident light, but on a gray background which diffusely reflects only 8 per cent of the light, the same brightness of background produced by 100 foot-candles on a white background is produced by 1000 foot-candles on a dark-gray background. It should be recognized that the backgrounds against which objects are seen in innumerable situations in the work-world, in the school and in the home do not provide high contrasts. What then becomes of Dr. Cogan's standard of 10 foot-candles for maximal visual acuity? Obviously it is meaningless in itself and absurd as a categorical statement.

Turning to visibility, we are concerned with one of two fundamental aspects involved in every task of critical seeing. One is the visibility of the task and the other is ease of seeing or performing the task. In 1928, we completed an extensive research which established the relations among the four fundamental factors of the visual threshold — size, contrast, brightness and time. The Luckiesh–Moss Visibility Meter has been built upon an adequate foundation of knowledge of these relations. The time factor may be introduced if one desires. The relations of these fundamental factors are involved in the unit and scales of visibility which we have created. By means of this device we can measure visibility in terms of a scale of size or in terms of a scale of contrast. It does not matter particularly what scale or unit is used so long as the user understands the scale he is using, although some scales are simpler than others. The important matter is to be able to measure visibility in understandable terms. That we can do. In a world dependent overwhelmingly on visibility of objects there has been no practical means of measuring visibility. Obviously it is impractical to dissect a visual object or visual task into its component parts. Any contribution of this sort is entitled to encouraging consideration and constructive criticism. Already this device has been welcomed with enthusiasm in a variety of researches and practices beyond the important realms of the science and practice of lighting.

The Luckiesh–Moss Visibility Meter does not determine the footcandles "necessary" for any visual task as Dr. Cogan has stated. It merely determines the visibility of an object or task under any seeing conditions in terms of a meaningful unit and scale of visibility. Also the visibility of an object or task can be determined in terms of the visibility of a specific task, such as reading under specified conditions. By this means it is possible to make a difficult task of seeing of the same visibility as an easier task of seeing by taking advantage of any controllable aid to seeing, such as light and lighting. All tasks which are visible are not equally visible. However, it is possible to make many of them equally visible. Anyone is at liberty to determine his own "standard" of visibility, and by means of this visibility meter, to explore the realm of suprathreshold visibility, the important

world of everyday seeing which is completely ignored in considerations confined to thresholds.

Dr. Cogan devotes one paragraph to the extensive and important realm of psychophysiologic effects of seeing which our researches specifically invaded to supply a foundation of knowledge for ease of seeing. These researches invaded not only an unknown realm but one which had been almost completely ignored. The observed physiologic effects of seeing, when correlated into a structure, form a highly integrated one. Of great practical importance is the fact that these researches have led to the development of certain criteria of ease of seeing which have been sorely needed. One in particular is the rate of involuntary blinking. We have used this criterion in more than a score of major researches not only in the realm of light and lighting but in other realms, such as typography and ocular refraction. The result is we now have a criterion of ease of seeing which is not only sensitive throughout a variety of applications, but which has meaning. In a few references which Dr. Cogan mentions in opposition, he does not discuss the criteria used, which obviously are all-important in interpreting results.

We have discussed a few aspects of Dr. Cogan's article for the purpose of calling the reader's attention to the extensive structure which is described as the science of seeing and, particularly, to its complexity and to its contributions in various phases of civilized activities involving visibility and ease of seeing. This structure cannot be properly appraised by ignoring the data and criteria involved. Toward the end of Dr. Cogan's discussion he reveals an inadequacy of concept in the statement, "There is no valid reason for believing that man cannot judge the amount of illumination that gives him easy and comfortable seeing." Such a possibility is just as far beyond the ability of a human being in respect to light and lighting as it is beyond his ability to specify, by means of his unaided senses, optimum conditions pertaining to such factors as diet, hygiene and eyeglasses. We do not believe that Dr. Cogan would admit that one could or should choose his own eyeglasses solely on the basis of introspection by the patient. Almost all progress in science is due to devices which have aided human senses, and practically all progress has been achieved since man learned not to rely solely on his senses. Furthermore, much of the great mass of scientific knowledge available today has come from the realm of the unobvious, which simply means that vast realm beyond the reach of our unaided senses.

MATTHEW LUCKIESH
FRANK K. MOSS

Lighting Research Laboratory
General Electric Company
Nela Park, Cleveland

* * *

The above letter was submitted to Dr. Cogan, and the following reply was received:

To the Editor: The article referred to in the foregoing letter was one of the "Medical Progress" series presenting an annotated analysis of the literature pertaining to illumination and eye health. It was specifically pointed out that there was little foundation for the widespread belief that damage to the eyes comes from low illumination, and since this misconception and much of the present campaign for more and more light is based on the researches of Luckiesh and Moss, their work was critically examined. The characterization of their work as a "research offensive," to which they now take exception, was not mine but was quoted from one of their own texts.

Statistics pertaining to the prevalence of defective vision are, as noted in the foregoing letter, appalling, but it is not apparent that this has anything to do with illumination. None of the usual lists of defective vision include, so far as I am aware, anything about faulty illumination as a cause. Since the authors now admit in this letter — and to my knowledge it is the first time they have done so in print — that it is "impossible to prove that poor illumination . . . harms the eyes," the authors should cease threatening the public with "permanent injury," "tragic toll" and "deeply hidden penalties," which they have previously claimed come from inadequate illumination.

Their objection to the stated amounts of illumination necessary for maximum visual acuity and so forth are not issues with the reviewer but with the investigators cited in the article and it seems only scientifically appropriate that these investigators merit some recognition in the all-inclusive "science of seeing."

I do not believe that the letter by Luckiesh and Moss should go without answer, for while the subject may not seem of great importance to the reader, it is, in view of the medical implications with which it has been enshrouded, of sufficient concern to be taken seriously. It is especially desirable that the real issues be kept as free as possible of unnecessary verbalism and that adequate counsel in matters pertaining to medicine be made available to the public.

DAVID G. COGAN, M.D.

Howe Laboratory of Ophthalmology
243 Charles Street
Boston

NOTICES

ANNOUNCEMENT

DR. ALLEN G. RICE announces the removal of his office on July 1 from 33 School Street, Springfield, to 146 Chestnut Street, Springfield.

CONSULTATION CLINICS FOR CRIPPLED CHILDREN IN MASSACHUSETTS, UNDER THE PROVISIONS OF THE SOCIAL SECURITY ACT

CLINIC	DATE	CLINIC CONSULTANT
Haverhill	July 2	William T. Green
Gardner	July 8	Mark H. Rogers
Brockton	July 10	George W. Van Gorder
Northampton	July 15	Garry deN. Hough, Jr.
Worcester	July 18	John W. O'Meara
Pittsfield	July 21	Frank A. Slowick
Fall River	July 28	Eugene A. McCarthy
Hyannis	July 29	Paul L. Norton

EXAMINATIONS FOR APPOINTMENTS IN THE MEDICAL CORPS OF THE UNITED STATES NAVY

Examinations for appointment as assistant surgeon (lieutenant, junior grade), United States Navy Medical Corps, will be held at all the large naval hospitals and the Naval Medical Center, Washington, D. C., on August 11 to 15, inclusive, October 6 to 9, inclusive, and January 5 to 9, 1942, inclusive.

Applicants for appointment as assistant surgeon must be citizens of the United States, more than twenty-one but less than thirty-two years of age at the time of acceptance of appointment, and graduates of Class A medical schools who have completed at least one year of in-

tern training in a hospital approved by the Council on Medical Education and Hospitals of the American Medical Association.

Examinations for appointment as acting assistant surgeon for intern training in naval hospitals accredited for intern training by the Council on Medical Education and Hospitals of the American Medical Association will also be held on October 6 to 9, inclusive, and January 5 to 9, 1942, inclusive. Applicants for appointment as acting assistant surgeon for intern training must be citizens of the United States, more than twenty-one but less than thirty-two years of age, and members of the junior or senior classes in Class A medical schools. After twelve months of intern training, acting assistant surgeons may apply for appointment as assistant surgeons in the United States Navy.

A circular of information regarding these examinations, physical requirements, rates of pay and promotion and retirement data may be obtained from the Bureau of Medicine and Surgery, Navy Department, Washington, D. C., on request. Applications for authorization to take the examination must be received at the Bureau of Medicine and Surgery three weeks before the examination.

Medical officers of the United States Navy are encouraged to develop a specialty, and are assigned, if their interest in the specialty warrants such action, to postgraduate instruction in the large naval hospitals, the Naval Medical Center, Washington, D. C., and civilian medical centers. Some of the specialties in which medical officers may seek qualifications are: surgery, medicine, ophthalmology, otolaryngology, roentgenology, laboratory, pathology, public health, psychiatry, deep-sea diving, aviation medicine (flight surgery), gas warfare, tropical medicine, medical research and so forth.

SOCIETY MEETINGS AND CONFERENCES

Calendar of Boston District for the Week Beginning Sunday, June 29

Monday, June 30

12:15–1:15 p.m. Clinicopathological conference. Peter Bent Brigham Hospital amphitheater.

Tuesday, July 1

12:15–1:15 p.m. Clinicoroentgenologic conference. Peter Bent Brigham Hospital amphitheater.

Wednesday, July 2

*12 m. Clinicopathological conference. Children's Hospital.

*Open to the medical profession.

September 1–5 — American Congress of Physical Therapy. Page 997, issue of June 5.

September 1–5 — American Occupational Therapy Association. The Mayflower, Washington, D. C.

October 13–24 — 1941 Graduate Fortnight of the New York Academy of Medicine. Page 834, issue of May 8.

October 14–17 — American Public Health Association. Page 579, issue of March 27.

January 3, 1942 — American Board of Obstetrics and Gynecology. Page 1079, issue of June 19.

April 20–24 — American College of Physicians. Page 996, issue of June 5.

BOOK REVIEWS

The Role of the Liver in Surgery. By Frederick Fitzherbert Boyce, M.D. 4°, cloth, 365 pp., with 44 illustrations. Springfield, Illinois: Charles C Thomas, 1941. $5.00.

This monograph won the quinquennial Samuel D. Gross Prize for Research in Surgery, awarded by the Philadelphia Academy of Surgery in 1940. It is a very superior piece of work and bears testimony of the author's scholarship and investigative talent. Each chapter is a gem in itself, and the subjects surveyed include autolytic peritonitis, the hepatic factor in thyroid disease, a concept of latent hepatic dysfunction, the hemorrhagic diathesis in jaundice and an appendix on the physiology of the liver. There are many helpful charts and photographs to illustrate the text.

The discussion of so-called "liver-death" is the best and most illuminating statement on this condition written to date. The author produces much evidence to explain this perplexing syndrome of hyperpyrexia and associated renal failure. He also notes the similarity in the clinical picture of patients dying after operations on the biliary tract, severe burns, intestinal obstruction, thyroid storm and traumatic rupture of the liver. These may all be due to a severe damage of the liver parenchyma.

Liver-function tests are evaluated, and the hippuric acid test of Quick is given the highest rating among those discussed. The author's belief that liver-function tests should be performed routinely on all patients having surgery seems a rather extreme point of view.

Laboratory workers and clinicians alike will find this an excellent presentation of modern knowledge on the liver in surgery.

Accepted Foods and Their Nutritional Significance: Containing descriptions of the products which stand accepted by the Council on Foods of the American Medical Association on September 1, 1939. 8°, cloth, 492 pp. Chicago: American Medical Association, 1939. $2.00.

This manual, which gives detailed information regarding the chemical composition of more than 3800 accepted products, is a companion to the volume on new and nonofficial remedies published by the American Medical Association.

The accepted products are classified in various categories, such as fats and oils, fruit juices, canned and dried fruits and fruit products. There is a suitable subject index, as well as an index of the manufacturers and distributors that stand accepted by the Council on Foods.

This book will be a welcome reference book for all persons interested in foods, especially the physician concerned with foods and nutrition.

Influence of a Public Health Program on a Rural Community: Fifteen years in Rutherford County, Tennessee, 1924–1938. By W. Frank Walker, Dr.P.H., and Carolina R. Randolph. 12°, paper, 106 pp., with 46 tables and 6 charts. New York: Commonwealth Fund, 1940. 25 cents.

The report is based on the experiences of a doctor of public health in a small county of Tennessee, where an extensive investigation has been carried on for a number of years under the auspices of the Commonwealth Fund. In addition to the valuable work accomplished by the investigator, the county has also been used by Vanderbilt University for acquainting senior medical students with the organization and operation of a rural public-health program and for the training of nurses in the technic of field nursing care. The county has thus been used as a public-health laboratory, and this well-written, brief report summarizes what has been accomplished in fifteen years. The book is illustrated by a map, and there are numerous graphs and statistical tables of value to public-health workers.

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